

**ANNUAL
REPORT
CALIFORNIA
ACADEMY
OF
SCIENCES
1965**



ANNUAL REPORT OF THE CALIFORNIA ACADEMY OF SCIENCES 1964-1965

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TO THE MEMBERS AND FRIENDS OF THE CALIFORNIA ACADEMY OF SCIENCES

THE 112TH year of the California Academy of Sciences has seen a change in the chairmanship of the Board of Trustees, Mr. Decker G. McAllister having retired from the board after serving his full statutory term of 15 years; he was Chairman of the Board for 8 years. In appreciation of his outstanding services the Board elected Mr. McAllister an Honorary Trustee and passed the following resolution:

"The Board of Trustees of the California Academy of Sciences wishes to express to Decker G. McAllister its profound appreciation of the wise and vigorous service he has rendered the Academy as member of its Board for the past fifteen years. Mr. McAllister has been a Trustee since February, 1950. He was elected Treasurer in 1952. In 1953, he was elected Vice Chairman, and in 1957 he was elected Chairman.

"During his Chairmanship, the Academy exhibited a growth without counterpart in recent Academy history. His eight-year tenure of this office saw the opening of the J. W. Mailliard, Jr., Library, the Alice Eastwood Hall of Botany, and the Norman B. Livermore Room. In 1963, a completely renovated Steinhart Aquarium was reopened to the public and is recognized as without peer among the world's aquaria.

"His dedication, his enthusiasm, and his high sense of purpose have won him the lasting gratitude of his colleagues on the Board, the staff of the Academy, and the City and County of San Francisco."

Other changes in the Board of Trustees included the retirement of Mrs. Joseph C. Fennelly and Mrs. Henry Potter Russell at the end of their 15 year terms. Both of these ladies rendered stalwart service to the Academy. The following new members were elected to the Board: Mrs. Ernest R. Lilienthal and Mrs. Joseph A. Moore, Jr., both active civic leaders; and Mr. Gregory A. Harrison, attorney.

Following the retirement of Mr. McAllister, the undersigned, previously a Vice Chairman, was

elected Chairman of the Board of Trustees.

During the year Dr. Robert T. Orr, Curator of the Department of Ornithology and Mammalogy, was appointed Associate Director of the Academy. He is eminently fitted for this position, having served with distinction as a Curator for 20 years and as a member of the Academy staff for 29 years.

The Academy's progress during the past year would have been impossible without the assistance of many people. First, I would like to acknowledge the devoted efforts of the staff, both scientific and administrative, who really constitute the Academy. To the Mayor of San Francisco, the Board of Supervisors, the Chief Administrative Officer, and many other City officials we owe thanks for their cooperation and understanding help. Many business and private organizations and individuals have given financial help without which the scientific research work would have suffered. And to our membership, many of whom increased their dues voluntarily in the past year, we give thanks for continued support. The members form a body of constituents, of alumni, which gives the Academy the influence that numbers bring.

In June we received the welcome news of a grant of \$1,250,000 from the S. H. Cowell Foundation, which will enable us to build a much needed addition to our buildings to be called Cowell Hall. This long-planned structure will face onto the band concourse, completing the Academy quadrangle of which three sides are already built. Its main floor will provide a spacious entrance loggia and exhibit area. The top floor will house administrative offices, releasing much needed space for expansion of the Entomology Department. A restaurant on the ground floor will return the Lovell White Hall to exhibition purposes. Our grateful thanks are due to the S. H. Cowell Foundation and to its Trustees, who have made this building possible.

We are also grateful to other friends who have generously remembered the Academy in the ultimate disposal of their property. Bequests from the estates of the late Edith W. Allyne, Barrett G.



Hindes, formerly a Trustee of the Academy, and Lillian Lawrence totalled approximately \$185,000, all of which has been placed with the endowment funds of the Academy.

During the past year, public attendance of the Academy fell off somewhat from the peak which had accompanied the reopening of the Aquarium. Attendance was slightly higher than 3 million, compared with 3½ million in the previous Academy year. This slight reduction in the throng of visitors was not altogether unwelcome to some of the hard-pressed members of the staff, and makes the more popular exhibits a little more visible to the public. It is still a very large figure compared with, for instance, the less than 900,000 attendance at the great Natural History Museum in London, England.

Your new Chairman will have a hard task following in the footsteps of Mr. McAllister. He will be relying confidently on the support of the members of the Board of Trustees, the Director, the staff of the Academy, and the goodwill of the membership at large.

Respectfully submitted,

Alan J. Galloway

ALAN J. GALLOWAY
Chairman, Board of Trustees

REPORT OF THE DIRECTOR

4 MORE THAN three million visitors came to the California Academy of Sciences during the 1964-1965 fiscal year. While here, they enjoyed the astonishing aquatic inhabitants of Steinhart Aquarium, the lifelike natural history scenes captured in the dioramas of the museum halls, and the wonders of the universe spread across the dome of Morrison Planetarium. They looked at meteorites and minerals, saw the indoor sun of the heliostat, watched the movements of a seismograph, and examined timekeeping devices and a host of other things. Through their visits, these three million people gained a better understanding and a further appreciation of the natural world in which we live. This fact alone justifies the existence of the Academy.

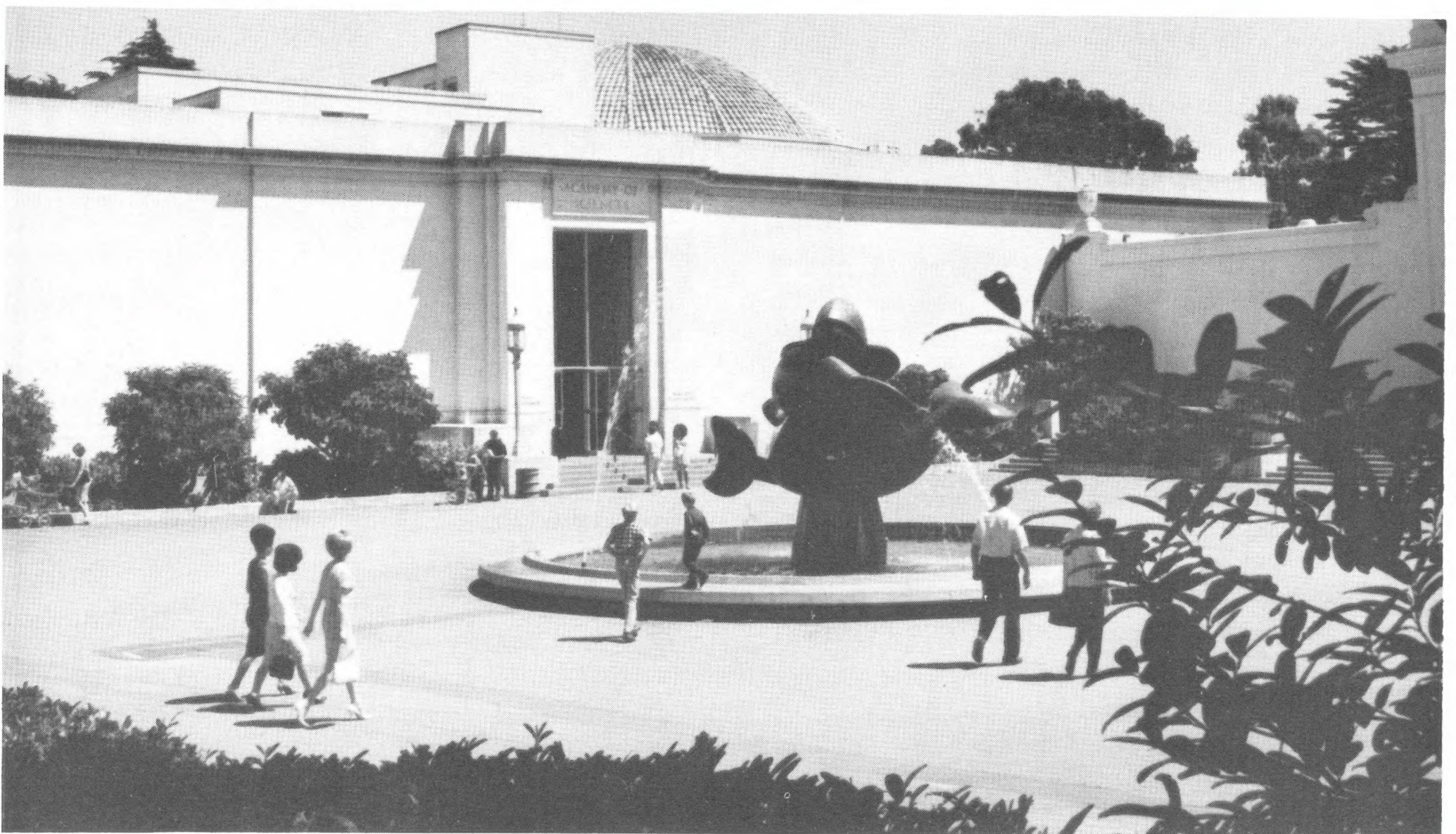
However, the public exhibits, important as they are, reflect only one Academy function. Its total effort is directed toward the general purposes of research—of exploring and interpreting the natural things of this globe on which we find ourselves.

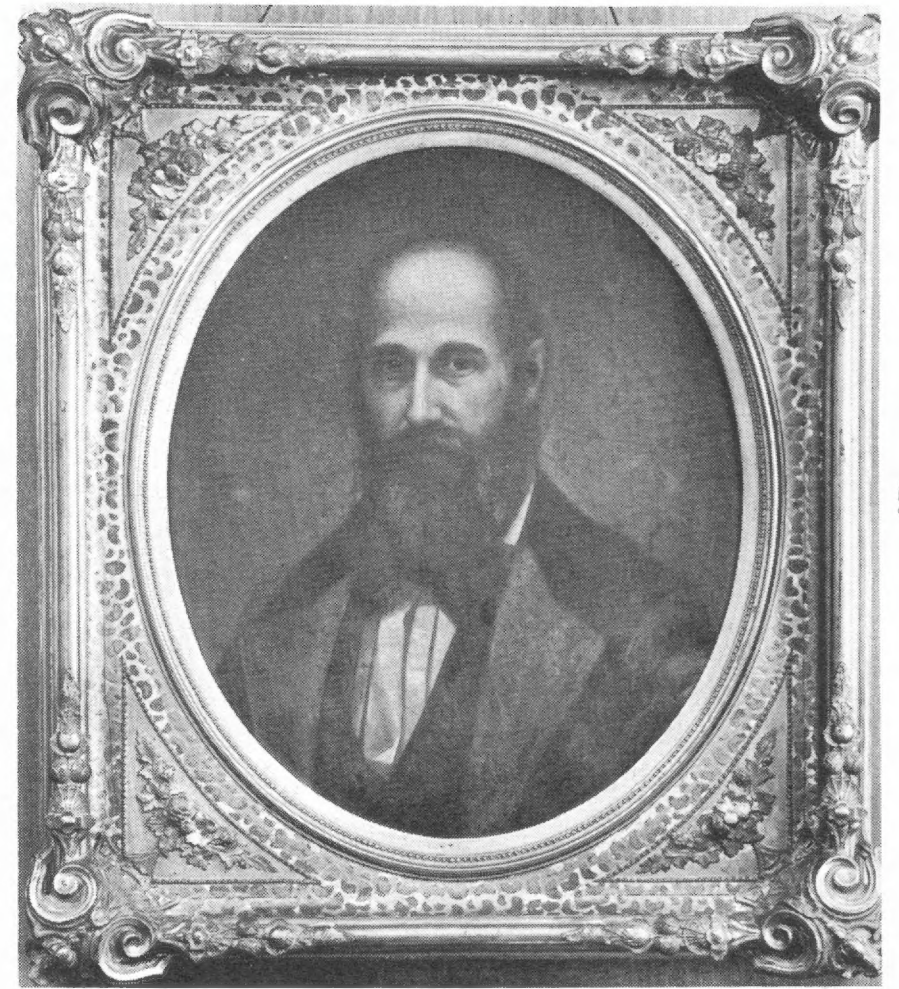
A geologist studying the effects of the Alaskan earthquake, an ornithologist exploring the cloud forest of Oaxaca, an entomologist in the Galápagos Islands, a marine biologist deep in the Gulf of California—all such field trips and collecting, the preservation of the specimens, their subsequent study in the research departments, and the resultant writing for both scientific and popular publications add up to the total Academy.

This is a report of those activities at the California Academy of Sciences for the year 1964-1965.

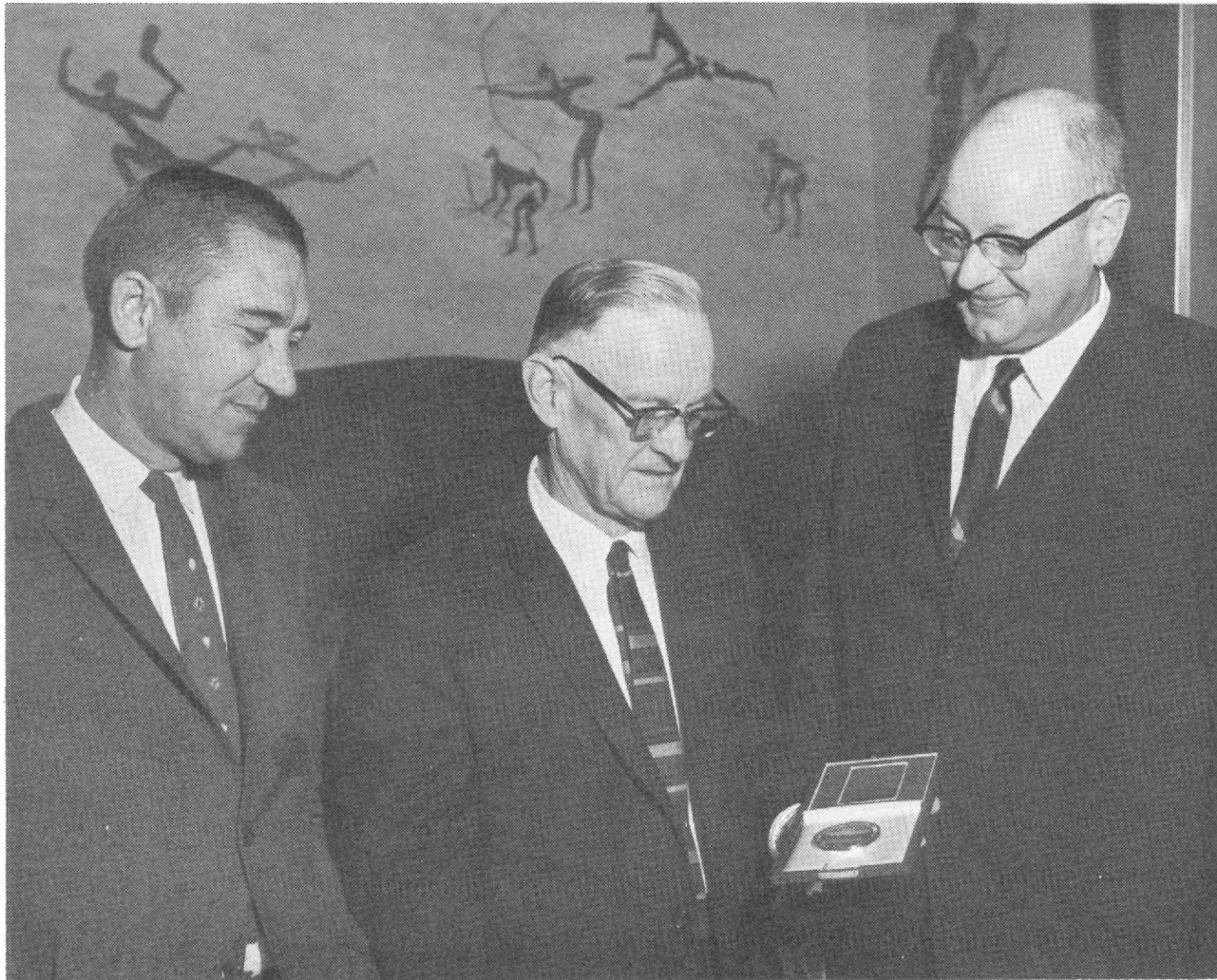
SPECIAL EVENTS

The Fellows of the California Academy of Sciences, at their annual banquet held November 12, honored Dr. Ira L. Wiggins by presenting him with the Fellows' Medal for the year 1964, the first such presentation in the organization's history.





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Left, Dr. Ira L. Wiggins, first recipient of the Fellows' Medal, with Academy President A. Starker Leopold, left, and Academy Director George E. Lindsay, right. Above, oil portrait of Academy founder Dr. Andrew Randall.

Dr. Wiggins, a past president of the Academy and a member of the Board of Trustees, is an internationally respected botanist and the author of the definitive work on plants of the Sonoran Desert and a flora of the Arctic slope of Alaska. Dr. Wiggins has served as Professor of Biology and Director of the Natural History Museum at Stanford University, Director of the Arctic Research Laboratory at Point Barrow, Alaska, and Scientific Director of the Belvedere Scientific Fund. He was an active participant in the Academy's Sea of Cortez Expedition in 1964.

The "swamp area" of Steinhart Aquarium, as the reptile and amphibian section is commonly called, was opened officially by Mayor John F. Shelley on August 24, 1964. More than two years were required for its preparation, it being the last unit in the general rehabilitation of the Aquarium. Forty-three environment-controlled vivariums house exotic reptiles, and 22 smaller units are home for a remarkable collection of amphibians. The large alligator pool was rebuilt and artistically landscaped

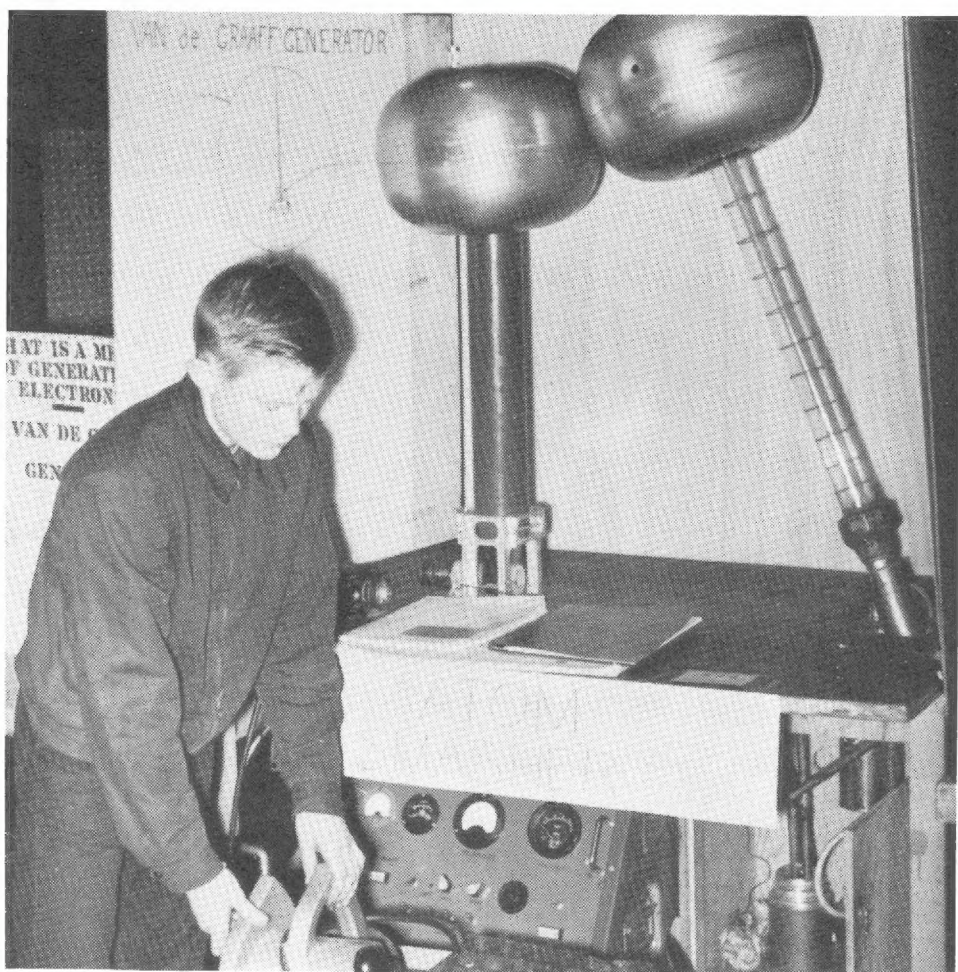
with tropical plants. The reptiles and amphibians, which had lived in temporary quarters during the reconstruction, are now comfortably housed and displayed, and, with the additional animals which have arrived from all parts of the world, make a really outstanding exhibit.

On April 4, 1853, Dr. Andrew Randall, a pioneer scientist, explorer, politician, and publisher, called a meeting of seven of his fellow San Franciscans and founded the Academy. Dr. Randall chaired the first meeting and became the first President, a position he held until he was murdered in 1856.

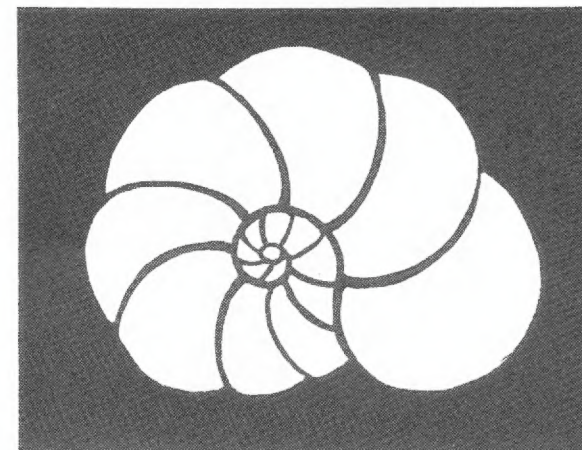
Because of his untimely death, little was known about the founder of the oldest scientific society in the West—that is, until Research Associate Clay P. Butler began a comprehensive biographical investigation of this remarkable man. Through his researches, Mr. Butler became acquainted with several descendants of Dr. Randall. As a result of these contacts, the Academy received a fine oil portrait of the founder from Miss Nellie

Randall, Mrs. Olga Randall, and Mr. Arthur Randall.

The family also contributed the original memorial resolution offered at the time of Dr. Randall's death by the President of the Academy representing the membership.



A student scientist, above, arranges his exhibit for the 12th annual Science Fair. Three of the judges, below, were Dr. John Dunn, Mr. W. E. Davis, and Dr. Tom Groody.

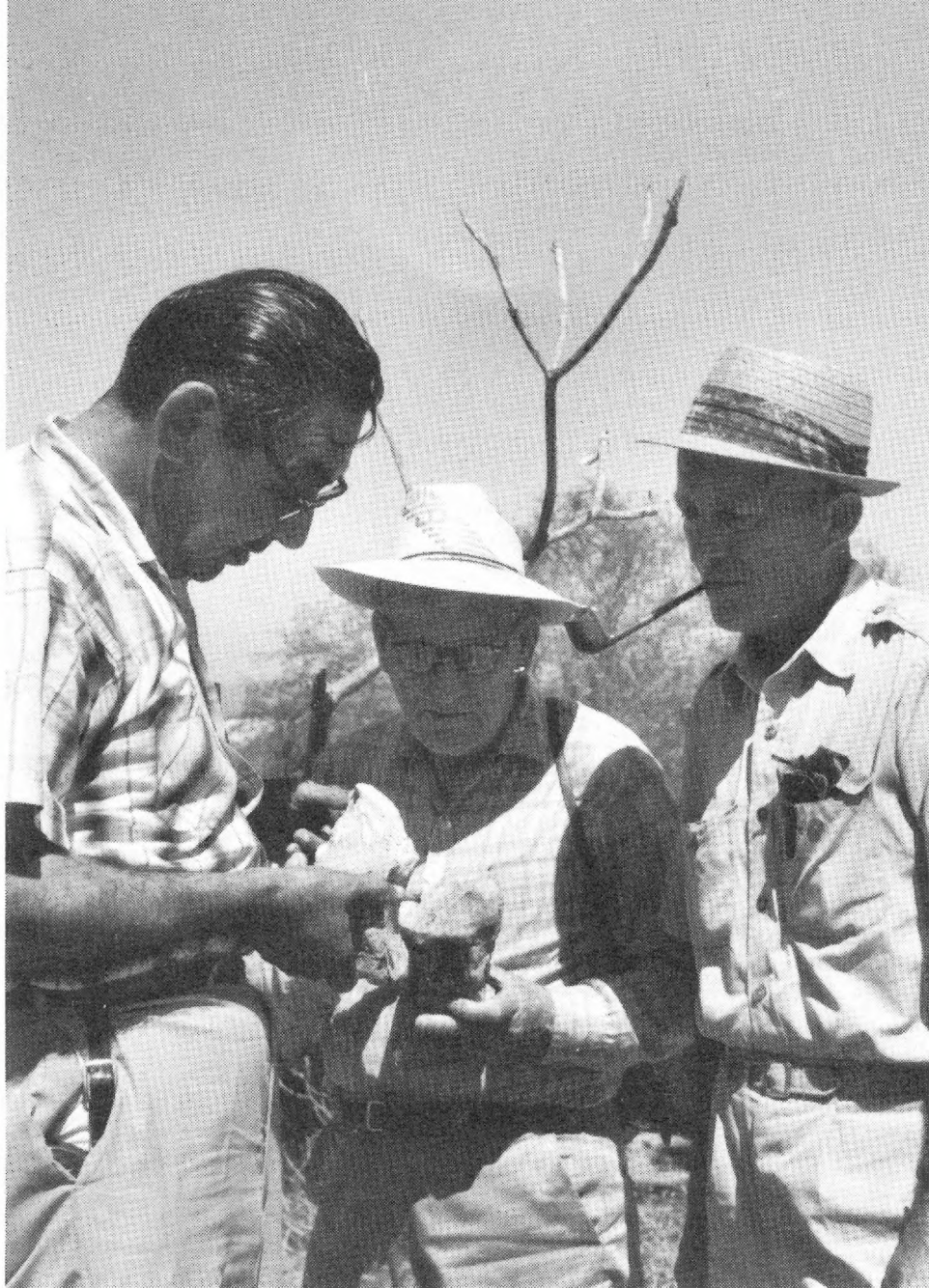


FIELD WORK AND EXPEDITIONS

While significant biological research is often carried on in organic chemistry laboratories or in rooms filled with computers, biologists are traditionally interested in the kinds of animals and plants sharing the earth. For more than a century, Academy scientists have explored the natural world, inventorying its flora and fauna. While samples of the biota are taken and preserved as specimens in the research collections for future investigations and to serve as vouchers for discoveries already reported, much field work is primarily concerned with observing the activities and life histories of living organisms in their natural environment. Geological and paleontological investigations also involve labors in both field and laboratory.

The first days of this fiscal year saw the return of the Sea of Cortez Expedition from the Gulf of California. This was undertaken in cooperation with the Instituto de Biologia of Mexico and the San Diego Natural History Museum, with the generous sponsorship of the Belvedere Scientific Fund and of Mr. Roy Marquardt. A narrative report of the expedition was published in the Academy *Proceedings*, and a documentary film and two "Science in Action" television programs were produced.

A second expedition which bridged two annual report periods was the Galápagos International Scientific Project. While the main group of Academy participants returned from the Galápagos Islands before summer 1964, David Cavagnaro, entomological field collector, extended his stay until June. He then collected in the Andes Mountains of Ecuador and returned to the Academy on July 18. In terms of numbers of specimens taken and new areas worked, Cavagnaro's contribution to the knowledge of entomofauna of the archipelago is one of the most important yet made. The Academy's participation in the Galápagos International Scientific Project was supported by a grant from the Belvedere Scientific Fund.



Left, Sr. Cesar Osuna, Dr. G Dallas Hanna, and Mr. Bing Crosby examine a fossil found near Santiago, Baja California. Below, J. Stuart Rowley and Dr. Robert T. Orr observing birds in Oaxaca, Mexico.



The Department of Ornithology and Mammalogy is studying the avifauna of the Sierra Madre del Sur in Oaxaca, Mexico. The Oaxaca Project, which started on September 1, 1964, and which will continue through August, 1965, is under the direction of Dr. Robert T. Orr, with Research Associate J. Stuart Rowley in charge of field work. It was undertaken in cooperation with the Western Foundation of Vertebrate Zoology and the American Museum of Natural History. Drs. Orr and Lindsay visited the areas of investigation with Mr. Rowley in January. Raymond Bandar and Luis Baptista of the Academy, and Dr. Dan Webster of Hanover College, Indiana, joined Mr. Rowley for several weeks' work in the summer of 1965. Two collectors from the Western Foundation of Vertebrate Zoology have also worked under Mr. Rowley's supervision.

Dr. G Dallas Hanna, Curator of Geology, headed a project to study the effects of the earthquake of March 27, 1964, on the animals and plants of Prince William Sound, Alaska. This was at the request of the National Academy of Sciences and resulted from a Presidential order. In addition to Dr. Hanna, the research team consisted of Peter Barrett, Walter Eyerdam, Stoner Haven and

William Johnston.

The *M. V. Harmony*, owned by Captain Dan Forseth, was chartered for the investigation. Land headquarters were established at Cordova and Mrs. G Dallas Hanna handled communications and arranged logistic support there. A series of stations was selected for detailed biological investigations, and inventories of the biota made at each. The field activities were conducted through June and July, 1965. Support was furnished by the National Science Foundation and the Atomic Energy Commission.

On April 23 through 26, a rapid survey of fossil deposits near Santiago and on Isla Cerralvo, Baja California, was made by Drs. J. Wyatt Durham and G Dallas Hanna, accompanied by Drs. Orr and Lindsay. Academy Trustee Victor J. Bergeron sponsored this trip and Mr. Bing Crosby arranged for transportation around Santiago. He also gave the party the use of his yacht for the crossing from Las Cruces to Cerralvo. A number of fossils were collected.

In April, Dr. Edward S. Ross and a group of entomologists made an overland trip into northern Baja California to determine the northern distribution of certain insects.

RESEARCH DEPARTMENTS

8 The Academy was founded for the purpose of conducting original research, and research remains its principal function. Eight departments, some of which include subdivisions such as those of mineralogy, conchology, and paleontology under the Department of Geology, are primarily concerned with research and the care of scientific collections. Others, including the Aquarium and Planetarium, conduct research in addition to their public exhibition activities. Still others publish the results of research. Of the full time staff and Research Associates numbering 160, a total of 66 are primarily concerned with the search for new knowledge.

BOTANY

John Thomas Howell, Chairman and Curator. The Herbarium contained 452,150 mounted specimens on May 31, 1965, an increase of 6,521 during the year. Accessions totaled 10,398; 7,760 by gift, 1,174 by exchange, and 2,004 from staff collections.

The Botany Department specializes in floristic studies of western North America. It is the center for many taxonomists working on regional studies. The California Botanical Club and its avocational botanists headquarter in this department.

Mr. Howell continued his studies of the flora of the Sierra Nevada, with three collecting trips into that area. He also devoted much time in preparing a manuscript on the genus *Echeveria*, by the late Eric Walther, for publication. He issued four numbers of the journal, *Leaflets of Western Botany*.

Dr. Elizabeth McClintock, Associate Curator, is an authority on cultivated plants and this year began work on *Hortus III* in cooperation with Bailey Hortorium of Cornell University. She wrote a guide to plantings in Golden Gate Park called *Trees of the Panhandle* which was illustrated by Virginia Moore and was published by the Academy. Dr. McClintock continued plant collecting in preparation of a flora of San Bruno Mountains, spon-



Above, Botany Department Curator John Thomas Howell prepares a manuscript for publication. Right, Gordon H. True, Research Associate in Botany, examines material relating to his studies on Nevada County plants.



sored by the Crocker Estate Company. She was assisted in this project by Walter and Irja Knight and Philip Wheeler. Dr. McClintock served on the governing boards or executive positions of several horticultural and conservation organizations.

Seven part-time employees and twice as many volunteers assisted the curators in their departmental duties and systematic studies. Volunteer help is particularly important and effective in this department; and that of Lewis Rose, who operated the exchange program and who is responsible for much curatorial work, deserves special recognition. Miss Marjorie Hart completed the re-packeting and filing of the 9,620 specimens in the moss section, and has started re-packeting the liverworts. Other important volunteer work was donated by Mrs. Leona Fick, Mrs. Gertrude Hardman, Mrs. Edna Kelsey, Mrs. Irja Knight, Mrs. Lilly Kruse, Mrs. Helen La Plant, Dr. Hans Leschke, Mrs. Roberta Long, and Mr. Peter Rubtzoff.

ENTOMOLOGY

Edward S. Ross, Chairman and Curator. The entomology collections contain 3,344,479 fully prepared specimens, 217,411 having been accessioned between July 1, 1964, and May 31, 1965. Of these, 40,302 came as gifts, 153,937 were prepared from material collected on previous Academy expeditions, 13 were received as exchanges, 23,025 were purchased, and 134 were received on permanent loan. Of the accessions, 134 were holotypes and 42 were allotypes.

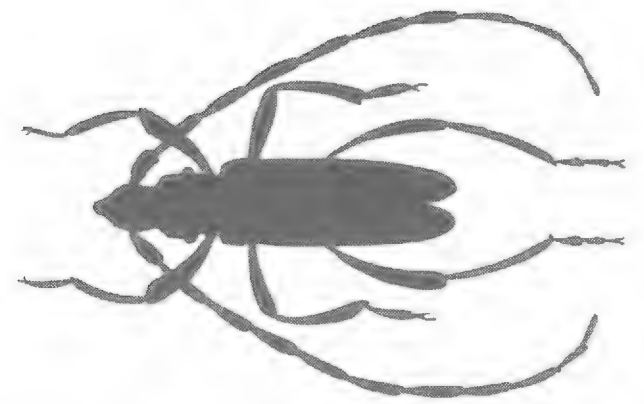
John Strohbeen of Santa Cruz donated 5,427 mounted Lepidoptera, chiefly butterflies. These are of particular interest because they comprise part of collection formed jointly with the late E. A. Dodge and the Dodge holdings were received years ago from another source. J. W. Tilden gave 1,187 identified butterflies, and C. N. Slobodchikoff a collection of 2,547 beetles, flies, wasps, etc. D. C. Rentz turned in 5,822 specimens, chiefly Orthoptera, and sold 3,773 more to the Academy. P. H. Arnaud, Jr., donated 11,355 miscellaneous insects, and H. B. Leech gave 11,420. These represented personal collecting and are in addition to expedition or Academy-financed material collected by them and processed this year.

This was the last year of five years of National Science Foundation facilities grant assistance, and the Curator decided to use most of the remaining funds for collection housing. Sixty-three new cases were added, 43 of which had to be installed in the hall adjacent to the department. This made possible a complete reorganization of the collection and provided space for the proper storage of more than one million unworked specimens waiting to be processed.

A clerical center was constructed, permitting the department secretary to also act as receptionist. A special alcove for cases containing unmounted specimens was developed. Mr. Leech completely reorganized the beetle section in accordance with the latest systems, and comparable reorganization was

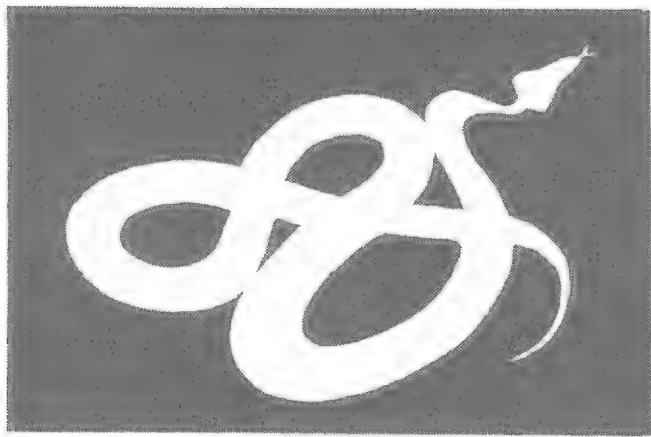
done by Dr. MacNeill in the Lepidoptera and other orders. Dr. Arnaud improved the arrangement of the Diptera section, and completed the reorganization of the separate type collection which now contains 9,004 holotypes and allotypes.

Dr. Ross continued his long-range monographic study of the Embioptera of the world, with support of the National Science Foundation. One section, "The Embioptera of Europe and the Mediterranean Region" was completed and is in press at the British Museum. Chromosome studies of the Embioptera, also supported by the National Science Foundation, were continued with Dr. Spencer W. Brown of the University of California, Berkeley, as co-principal investigator, and Mr. Laurence J. Berlowitz as his assistant.



Above, Dr. Edward S. Ross, Entomology Department Curator, photographing an insect in Cave Creek, Chiricahua Mountains, Arizona. Below, Clark Ross and David Cavagnaro packing insects in East Pakistan.





Hugh B. Leech continued his personal research on water beetles and collected in streams of Lake County, and from southern Mendocino County to southern San Mateo County. He also collected thousands of insects on a 5,000-mile trip through western Canada and United States, and made another collecting trip to San Diego County, California. Dr. Edward L. Kessel continued his research on the biology and taxonomy of the Platypezidae, or flat-footed flies, with thousands of miles of travel in the West. Dr. Paul Arnaud took a privately financed, nine week, research-collecting trip to the eastern United States during the fall, studying museum collections and collecting specimens in the field. He specializes in the parasitic fly family, Tachinidae. Dr. C. Don MacNeill continued his studies of Lepidoptera with emphasis on the vast Noctuoidea section. John W. Green continued his avocational research toward a revisional paper on cantharid beetles.

The Entomology Department houses the most important collection of insects in western North America. This means that it has particularly heavy use. Of 924 visitors to the Department during the year, at least half were serious entomologists and research students who spent various lengths of time in their studies. Specimen loans for research purposes from July 1, 1964, to May 31, 1965, totaled 61,504 insects sent out in 219 separate transactions.

GEOLOGY

G Dallas Hanna, Chairman and Curator. Leo G. Hertlein, Curator of Invertebrate Paleontology. This department includes sections devoted to geology, paleontology, mineralogy, and conchology.

As has been mentioned before, Dr. Hanna has been deeply involved with investigation of various aspects of the Alaska earthquake. He accompanied a party of the U.S. Geological Survey from May 17 to July 1, 1964, and assembled collections in Prince William Sound. He attended the Alaska

Science Congress from August 30 to September 9, 1964. Then, at the request of the National Academy of Sciences, he organized and headed a field party to investigate the effects of the changes of habitats on the marine and terrestrial biota of the area. The party, which started operations on May 25, 1965, worked out of Cordova, Alaska, using the M. V. *Harmony*. Mrs. Hanna maintained headquarters in Cordova and was the expeditor for the operation.

Dr. Hanna also continued his research on diatoms during the year and completed a monograph on the genus *Kittonia* with Research Associate A. L. Brigger.

Dr. Hertlein continued his monographic studies of the fossil fauna of the San Diego formation, as well as his curatorial duties for the large fossil collections. Three hundred twenty lots of specimens were catalogued and arranged in the general series during the year.

Research Associate and Honorary Curator of Mineralogy Charles W. Chesterman supervised the integration of several mineral collections into one systematic group.



Members of both the Geology and Invertebrate Zoology departments have devoted much time to editing and proofreading the MacFarland manuscript on nudibranch mollusks.

HERPETOLOGY

Alan E. Leviton, Chairman and Curator. The Department received 5,179 specimens of reptiles and amphibians during the year from the United States, Mexico, Afghanistan, New Guinea, Brazil, Panama, Costa Rica, Ghana, Saudi Arabia, Congo, Russia, Pakistan, India, Iran, and the Galápagos Islands of Ecuador. As of June 1, 1965, 100,500 catalogued specimens were in the collection, an increase of approximately 5,600 during the year.

The Department's new laboratory devoted to biochemical systematics, primarily for the study of serum and venom proteins, was completed and occupied. The already restricted quarters of the Department were further subdivided and equipped to provide working facilities for visitors and students.

Research activities centered about three main areas of interest: the herpetology of Asia, the utilization of protein characteristics in biochemical systematic evaluation of relationships, and the structure, function, and significance of the ear in establishing relationships among reptile groups. Dr. Leviton continued his studies of the herpetofauna of the Philippines, India, and other areas. Mr. Steven C. Anderson worked on a monographic review of the herpetology and zoogeography of Iran. Research Associate Malcolm Miller has completed a preliminary study of the anatomy of the inner ears of lizards and has extended the study to snakes. Field Assistant Allan Greer, a graduate student at Harvard University, undertook field investigations in Nayarit, Mexico, and worked up his collections at the Academy. Two Stanford University Ph. D. candidates worked under Dr. Leviton's direction and used Academy facilities. Mr. Fred Schuierer is studying the serum protein characteristics of blood from populations of *Bufo boreas* and its relatives, and Mr. Edward Schalenberger is working on the lizard fauna of Peru.



Left, the M. V. Harmony at Perry Island, Alaska. Above, Mr. Fred Schuierer in the Department of Herpetology laboratory for the study of blood serum proteins. Right, Herpetology Department collections.

ICHTHYOLOGY

W. I. Follett, Chairman and Curator. About 7,000 specimens were accessioned by Associate Curator Lillian Dempster during the year. Many rare and unusual fishes were received from fifty-two donors.

Mr. Follett continued his studies of fish remains from archaeological sites in the southwestern United States and as far south as Guatemala, and completed seven manuscripts on archaeichthyological projects.

Mr. Follett continued his photography of ichthyological specimens, and contributed photographs to members of the California Department of Fish and Game.

During the year Mr. Follett collected in various counties of California, including Plumas, Yolo, Del Norte, Riverside, and Monterey. He also journeyed as far afield as Kansas and North Carolina.

The Curator served as Chairman of the Nomenclature Committee of the American Society of Ichthyologists and Herpetologists, and furnished nomenclatural assistance to a number of colleagues. In both of these activities, Mr. Follett was extensively assisted by Associate Curator Lillian Dempster.



Unusual color patterns in the Barred Surfperch from the Ichthyology Department collections. (Photo by W. I. Follett.)

Mr. John D. Hopkirk, graduate student at the University of California, Berkeley, and part-time assistant in the Department of Ichthyology, augmented the department's extensive collections of osteological material.

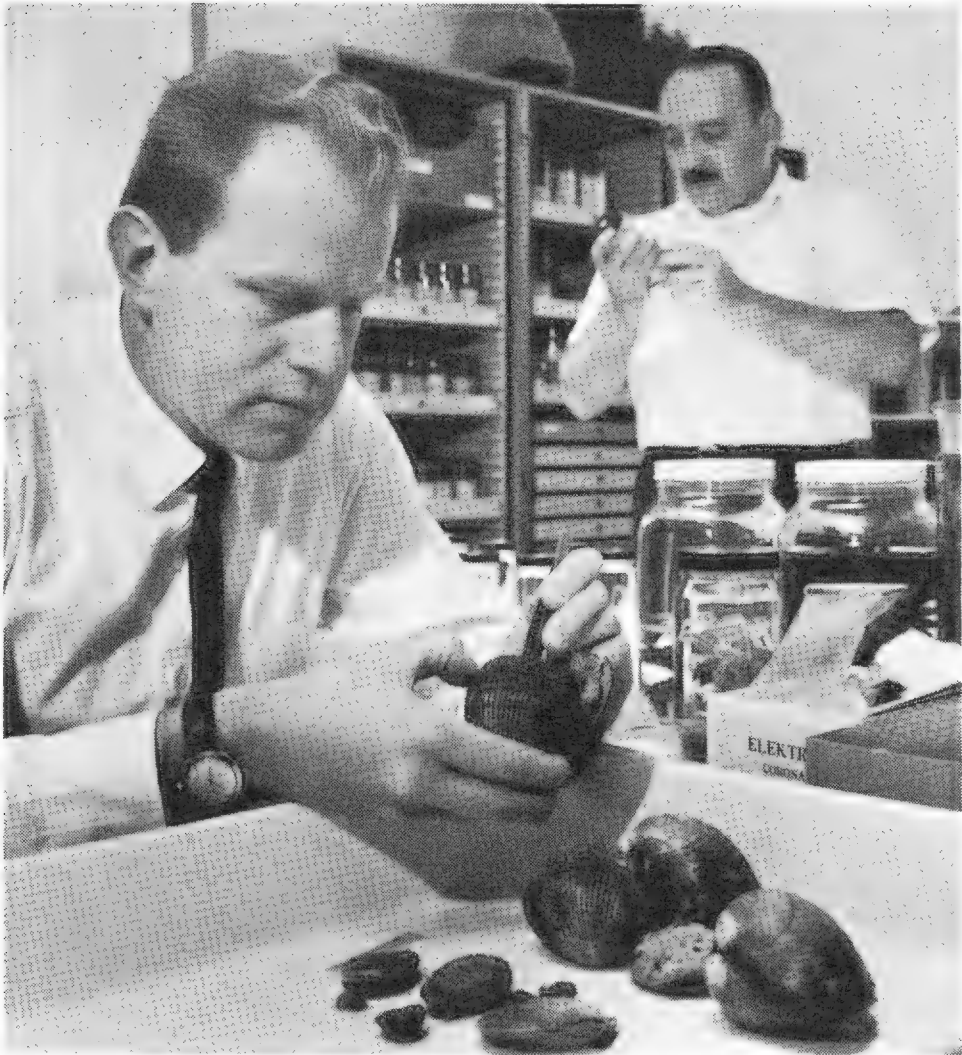
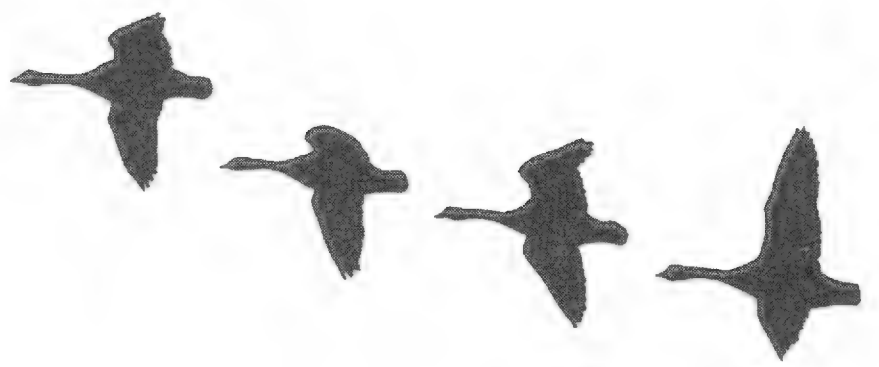
Dr. Carl L. Hubbs of the Scripps Institution of Oceanography, Research Associate in the Academy's Department of Ichthyology, made use of the department's collections in furtherance of his studies of certain anatomical characters of the viviparous surfperches. Dr. Bruce B. Collette of the Ichthyological Laboratory, U.S. National Museum, spent several days studying the department's collections of needlefishes in connection with his forthcoming revision of that family.

INVERTEBRATE ZOOLOGY

Robert C. Miller, Chairman and Curator. The year 1964-1965 was one of progress and development. Emphasis continued to be given to caring for the large backlog of preserved invertebrates and to their systematic arrangement. As of June 30, 1965, approximately 13,800 lots of invertebrates, containing well over 140,000 specimens, were available in the Department's research collection. About two thirds, or 80,000 of these, were processed during the past year. Type specimens from the Stanford Collection and other sources were acquired, bringing to more than 200 the number in the Department's type collection.

The Department has been operating under a two-year grant from the National Science Foundation, which provides the salaries of the Assistant Curator and Technical Assistant, as well as expenses for special curatorial equipment and supplies.

Associate Curator Allyn G. Smith continued his preparation of a monograph of the Fusinidae (spindle shells) of the west coast of North America, worked on papers dealing with deep-water chitons and carnivorous mollusks in the family Neptuneidae, and on an up-to-date list and systematic analysis



Above, Assistant Curator Charles Stasek and Dustin Chivers prepare specimens in the Department of Invertebrate Zoology. Below, in the Department of Ornithology and Mammalogy Mrs. Jacqueline Schonewald places small mammal skulls in vials to be added to the collections.



of the land snails of the Galápagos Islands. Assistant Curator Stasek did the necessary research work on the type specimens housed in the department and prepared a list of these for publication. He continued his studies of the giant clam *Tridacna maxima*, and other mollusks. Research Associate Francis P. Filice devoted much time working on the holothurians (sea cucumbers).

Volunteer assistants donated many hours of work. Among the volunteers were San Francisco State College students James Norris, Lawrence Kane, Tom Halstead, Victoria Willard and Mrs. Mary Jo (Ryan) Duncan. Mrs. Kathleen Kamiya, a graduate student at the University of California Medical School, gave 94 hours of her time.

ORNITHOLOGY AND MAMMALOLOGY

Robert T. Orr, Chairman and Curator. Dr. Orr was appointed Associate Director of the Academy in the autumn of 1964 and also served as a visiting professor in the Department of Zoology at the University of California at Berkeley in the spring of 1965.

The research collections include approximately 85,000 bird skins, 18,000 mammal skins, and 20,000 sets of eggs. Two hundred eighty-eight specimens, consisting of 49 birds, 238 mammals, and one set of eggs were accessioned during the year. Approximately 1,000 additional specimens of birds were received as a result of the Oaxaca Project. These will be divided between the Western Foundation of Vertebrate Zoology, the American Museum of Natural History, and the Academy, with a representative set to be deposited with the Department of Wildlife of Mexico when the project study has been completed.

The Oaxaca Project is a cooperative undertaking of the institutions mentioned above. It involves a year-long field study of the avifauna of the Sierra Madre del Sur in southern Oaxaca, and will include some work on the small mammals of

the region. New roads built across the mountains connecting Ciudad Oaxaca, Puerto Escondido, and Puerto Angel have opened a formerly inaccessible area of cloud forest and vegetational zones which will soon be altered by lumbering and milpa agriculture. It was essential that the biological study be made immediately or the opportunity would have been irrevocably lost. Grants of \$5,000 from the Western Foundation of Vertebrate Zoology, \$3,000 from the Sanford Trust Fund of the American Museum of Natural History, \$1,200 from the John C. Augsbury Fund, \$500 from the American Association for the Advancement of Science, a gift of \$200 from Dr. and Mrs. Copeland MacClintock, and Academy funds, made the project possible. It is under the direction of Dr. Orr with Research Associate J. Stuart Rowley in charge of field work. Dan Webster, Raymond Bandar, Dennis Breedlove, Wendell Durant, Warren Rook and Luis Baptista participated in the field work. Drs. Orr and Lindsay surveyed the area of investigation in January, 1965.

Dr. Orr continued his studies of California sea lions with two trips to Año Nuevo Island, and with a visit to Seal Island immediately north of Cerralvo Island, in the Gulf of California, on May 25, 1965. He also continued working on the taxonomy of swifts, assisted by Leonard Greene, a graduate student from the University of San Francisco.

EDUCATIONAL SERVICES

EXHIBITS

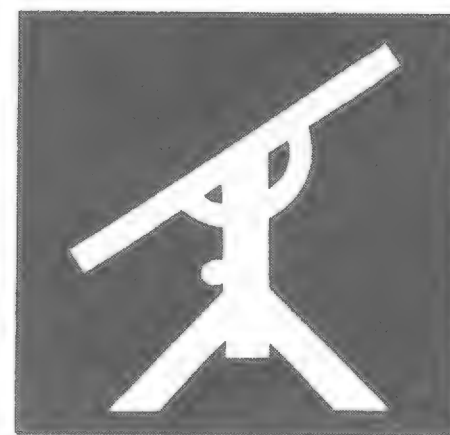
Mearl F. Carson, Chairman and Curator. The effectiveness of a museum depends upon its exhibits, which must please and stimulate the interest of visitors. The exhibits are educational and a museum is an educational institution. It provides glimpses and facts about some unfamiliar objects and studies in depth of others.



Top, Charles Dornbach prepares a temporary exhibit. Above, the Rocky Mountains Mule Deer Group is once again on view. Below, Henry Evans' Plant Portraits, one of the popular exhibits of the year.



The exhibits of the Academy range from good to poor, and much of the past year has been devoted to planning for essential improvements. With more than three million people coming to the Academy each year, we are obligated to provide them the most significant and interesting exhibits possible. A zoo or an aquarium is a living museum.

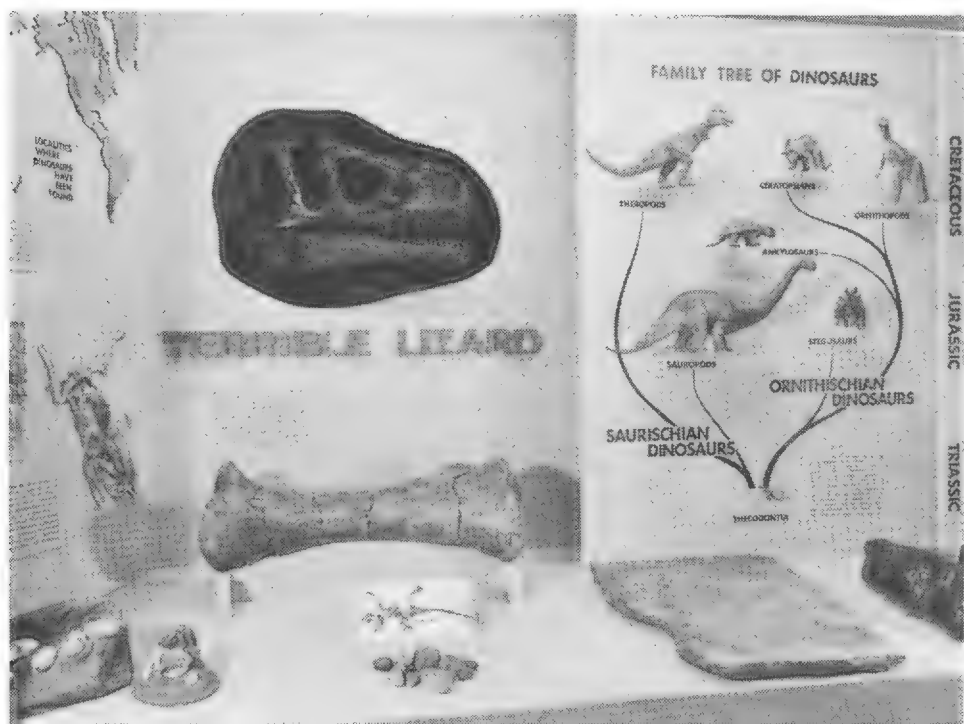


Steinhart Aquarium is the most used section of the Academy and is responsible, to a degree, for our tremendous popularity. The living fishes and other animals have beauty and interest which static exhibits lack. On the other hand, the museum displays and planetarium shows complement our living exhibits, and have unique aesthetic, educational, and recreational values.

Eleven new permanent exhibits were completed during the past year. These included meteorites and other displays in the Hall of Astronomy, a plant community exhibit in the Alice Eastwood Hall of Botany, and several additions to the Hall of Fossils. A renovation and new illumination of the Maude Rex Allen Lamp Collection was sponsored by the Pacific Gas and Electric Company.



Above, Toshio Asaeda explains some exhibit techniques to students. Below, one of eleven permanent exhibits installed this year.



Forty-eight temporary exhibits were presented, including among others, 12 "Exhibits of the Month", "Timepieces of the Month", special displays for *Pacific Discovery*, and several major exhibits in Lovell White Hall of Man and Nature. The Natural Science Foundation provided a replica of a laboratory building of the type used in Antarctica. Called "Nature's Frozen Desert", it was set up in the foyer of the Science Museum and shows research currently being conducted in that area.

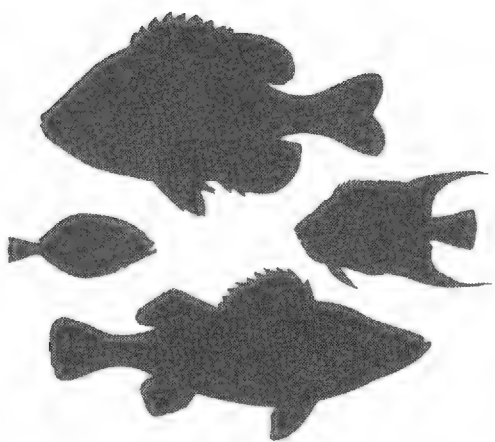
HOROLOGY

Bruce A. Kock, Honorary Curator of Horology. This department is almost inseparable from the Exhibits Department since its principal function is the maintenance and improvement of the outstanding William Barclay Stevens Collection of time-keeping devices. Mr. Kock, on a volunteer basis, has furthered the development of the displays and enlargement of the collection. He has appeared on local and national television and made many public addresses during the year. He donated numerous objects to the Academy collections and obtained important gifts from Mr. James W. Gibbs, the M. H. de Young Museum, and others. Mr. Kock has generously performed all of the services of a curator, including research, accessioning of significant material, the care of public exhibits, and an active public relations program for the Academy.

ALEXANDER F. MORRISON

PLANETARIUM

Thomas M. Gates, Manager. The Planetarium presented 942 public shows during the year which were attended by 144,148 people. In addition, 160 school shows were given for 46,541 students for a total of 1102 performances before 190,689 viewers. On almost any weekday during the school year queue after queue of hundreds of school children filled the Planetarium foyer as they



waited their turn to be introduced to the wonders of the universe. The Planetarium staff was also charged with responsibility for the continuing Morrison Auditorium showings of the Academy documentary film, "The Sea of Cortez".

More than 3,000 written requests for information were processed and uncounted thousands of telephone inquiries answered.

Five courses of instruction were given by the Department of Astronomy during this report period, two in the fall semester and three in the spring. Three of these covered Astronomy Appreciation and were taught by Thomas M. Gates and Michael A. Bennett. Celestial Navigation courses were presented by Captain David W. Todd, Jr., U.S.N. Ret.

Meteorite research was carried on by Research Associate Clay P. Butler, Mr. Gates, and Mr. Bennett. A field trip was made to the impact area of the Oroville meteorite, and a program developed for further meteorite investigation in Oregon and Arizona.

STEINHART AQUARIUM

Earl S. Herald, Superintendent and Curator of Aquatic Biology. The outstanding event of the year for this most popular section of the Academy was the opening of the "swamp area" with its 65 new units for the exhibition of reptiles and amphibians. The unique bank of amphibian displays was made possible by the Ida Mary Carmany bequest and has been named in her honor. The reptile and amphibian exhibits surround the alligator pool at the entrance of the Aquarium; these beautiful new displays provide the first impression most visitors receive when they come to the Academy.

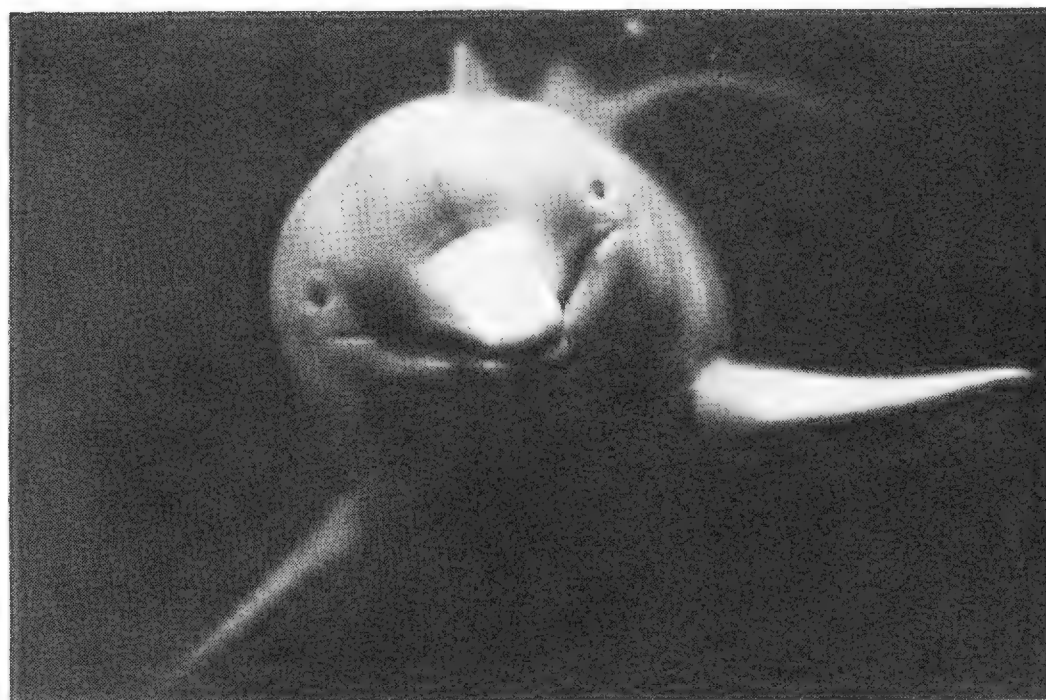
Only four aquatic mammals abide in the aquarium but they are all particular favorites with our visitors. The graceful pair of Pacific white-sided dolphins, a gift from Marineland of the Pacific, share a large tank with mischievous Cissie, a harbor



Above, Cissy—a Harbor Seal—with Aquarium staff friends. Right, a visitor and an Australian Lace Monitor eye one another.

seal and the Aquarium mascot. Rarest and most spectacular of the new animals is "Whiskers", a fresh-water dolphin from Iquitos in the Peruvian Amazon. "Whiskers", who acts like a big, friendly puppy, was given to Steinhart by the San Francisco Aquarium Society. It is hoped that additional aquatic mammals can soon be added to the aquarium exhibits.

Though the great diversity of fishlife shown in the aquarium amazes our guests, they would be equally impressed if they could see the complicated system of filters, heaters, refrigeration systems, water sterilizers, pumps, and plumbing which are required to maintain optimum living conditions in the 178 display tanks. Eight different water systems are necessary, with specific temperatures. Engineers and biologists work together to make Steinhart



Above left, a South American Boa Constrictor with 32 youthful progeny. (S.F. Chronicle photo.) Left, Whiskers, a rare fresh-water dolphin from Peru. Above, a pair of Kissing Gourami live up to their name.

Aquarium one of the very best.

Also unseen by the public are the research laboratories, collecting trucks, and diving equipment required to operate the aquarium. Fish are flown in from all over the world. Several Standard Oil Company of California ships have special tanks for the free delivery of specimens from foreign areas. Basic support of Steinhart Aquarium is provided by the City and County of San Francisco.

While the Aquarium is primarily an exhibit activity, its staff and facilities are involved in a number of cooperative research projects. These are carried on with the California and Nevada Departments of Fish and Game, San Francisco State College, the U. S. Department of Interior, and the University of California. These studies range from growth rates of Echinoderms to acclimatizing ocean

fishes for a life in saline Pyramid and Walker Lakes in Nevada.

The Aquarium is called upon daily to answer many technical questions by other institutions—and by home aquarists. Dr. Herald continues as consultant to the new National Aquarium in Washington, D. C.

TELEVISION

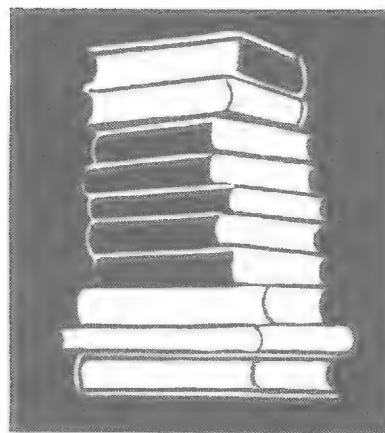
Daniel J. Norton, Executive Producer. The Academy television program, "Science in Action", was produced for its 15th consecutive year, but this was the first in which all production was within the confines of the Academy. A new sound studio constructed during the summer of 1964 made this possible. Dr. Earl S. Herald, Program Host, was

able to meet his distinguished guest scientists at the Academy, making it unnecessary to journey to a commercial studio for filming.

The program was televised over 22 stations, from Miami to Honolulu, as well as in foreign countries. For the first time viewers throughout California could see it. The Pacific Gas and Electric Company joined the Wells Fargo Bank in sponsoring the program in all northern and central California markets. Southern California Edison Company arranged for its showing in Los Angeles and Santa Barbara, and the First Federal Savings and Loan was the sponsor in San Diego. We express our appreciation to these fine organizations and to the many sponsors in other cities for making another season of "Science in Action" possible. It is television's oldest and most honored science program.

"Science in Action" is an educational program which has been produced without the subsidies usually available to educational television.

Dr. Earl S. Herald with Dr. Glenn T. Seaborg as his guest on the "Science in Action" program "Nuclear Science."



The program has allowed the Academy to explore and interpret many areas of science and has extended the Academy's activities to millions of homes over the United States and to several foreign countries. It has been costly to the Academy, but it is expected that sales of the already-produced episodes in new markets will eventually cover all costs of production.

At the end of the fiscal year, negotiations were under way for the continued production of "Science in Action" by third parties at no expense to the Academy but with the latter retaining control of the program.

J. W. MAILLIARD, JR., LIBRARY

Ray Brian, Librarian. The central library served Academy members, and the staff, and had heavy use by the faculties and graduate students from nearby universities and colleges and many visitors from outside California.

The department accessioned 423 collections totalling 8,415 pieces which, with 2,573 pieces purchased, gave an over-all growth of 10,988 items. Major additions this year were the Eric Walther collection of botanical and horticultural works and an almost complete set of Sowerby's *English Botany* donated by Mr. Paul Anderson. Many other fine and valuable books were received as gifts from generous friends. The Belvedere Scientific Fund continued to purchase items relating to the natural history of Baja California as well as Volume V of Carl Wheat's *Mapping the Transmississippi West*.

A tremendous backlog of book-processing which resulted from the rapid expansion of the library and the move from its old quarters in North American Hall to the new facility was reduced somewhat during the year. Mrs. Nancy Haritatos, Assistant Librarian, and Miss Mary Stilwell, Library Assistant, joined the staff in September.

Much valuable assistance has been provided by volunteers. Library Associate Margaret W.



Above, a major gift to the Library this year was a set of Sowerby's "English Botany". Right, an important Library function is that of inter-library loans.



Campbell has continued to arrange the papers of people associated with the Academy, and through her efforts important items have been added to the Eastwood and Eisen collections. Mr. Julian Arntz and Mrs. Pat Smith have contributed their expert services regularly and continuously. Mrs. Mary Gillogley and Mr. Paul Anderson have recently joined the volunteers.

The J. W. Mailliard, Jr., Library, and the departmental libraries housed in the aquarium and scientific departments are essential research assets, not only for the Academy staff but for the whole scientific community.

SCIENTIFIC PUBLICATIONS

Edward L. Kessel, Editor. The scientific productivity of an institution and of its professional staff are judged by the published results of research accomplished. Publication of scientific papers was

one of the original purposes of the Academy when it was founded more than a century ago. It remains so today.

Four *Occasional Papers*, eight numbers of the *Proceedings*, and one *Miscellaneous Paper*, totaling 359 pages, were issued during the year. In addition, about 750 pages of scientific publications are in press. Heavy editorial demands of a *Memoir*, and negotiations for a new printing contractor occasioned by the closing of our former publishing company, were responsible for the delays which prevented the completion of a number of these during the report period.

The Committee on Publication, Drs. Hertlein, Kessel, and Lindsay, reviewed all scientific papers submitted for publication. In most cases additional opinions were solicited from our staff specialists in the subject areas of the manuscript under consideration.

As in previous years, several publications



were printed in the Academy shop. Dr. and Mrs. G Dallas Hanna printed the color plates for these, Dorothy M. Ludlow did the typography, Maurice C. Giles the photoplates, and Glen S. Hayden was responsible for the rest of the production.

PACIFIC DISCOVERY

Bruce Finson, Editor, with Johan Kooy, Art Director. The Academy's bimonthly magazine, *Pacific Discovery*, continued to carry the story of nature and man in the Pacific world to many thousands of readers. There were five or six well-illustrated natural history articles in each issue in addition to Hal Richardson's excellent "Academically Speaking" dealing with some facet of our institution. Other regular features were a section on conservation by Raymond F. Dasmann or one of his guest writers, a page about astronomy or space and including a sky diary, and a center spread nature photograph authored by an outstanding photographer.

The publication of *Pacific Discovery* required heavy contributions of time by Associate Editors Robert T. Orr, Robert C. Miller, and A. Starker Leopold, who read and recommended manuscripts for general acceptance, and for technical accuracy.

Pacific Discovery is distributed to all members and to non-member subscribers.

PUBLIC INFORMATION

Hal Richardson, Public Information Officer. The Academy is a public information institution. All of its displays and activities and publications are for the purpose of informing the public. The individual departments answer inquiries from the public such as: What can I do for my ailing goldfish? What do I feed a deserted baby bird? Please send me all the information you have on the Galápagos Islands,



Above, an eager young visitor not quite tall enough to see through the porthole of the whirlpool tank. Below, a news release brought many school children to the Dolphin Drawing Contest.



etc., etc.; but it is Hal Richardson's job to tell officially about the Academy.

Mimeographed press releases are supplied to hundreds of newspapers, the wire services, and radio and television stations, who in turn inform their readers, listeners, and viewers of special events at the Academy, changes in planetarium shows, new exhibits, acquired oddities, and other things we wish them to know. Thousands of dollars worth of air time and newspaper space are given free to the Academy each year by friends in the various media, for which we hereby express our unbounded appreciation.

The Academy press book for 1964 indicates that 2,168 items about the Academy appeared in the newspapers of 33 states, Washington, D.C., Canada, Egypt, and Sweden. Mr. Richardson also wrote for national publications. Members of the staff made numerous appearances on radio and television as well as before local groups.

Mr. Richardson also writes, edits, and arranges the distribution of the monthly Academy *Newsletter*, which keeps the membership informed of happenings, meeting schedules, staff changes, and other items of interest. He also entertains special visitors, including the heads of state and institutions as well as University classes and visiting groups of all kinds.

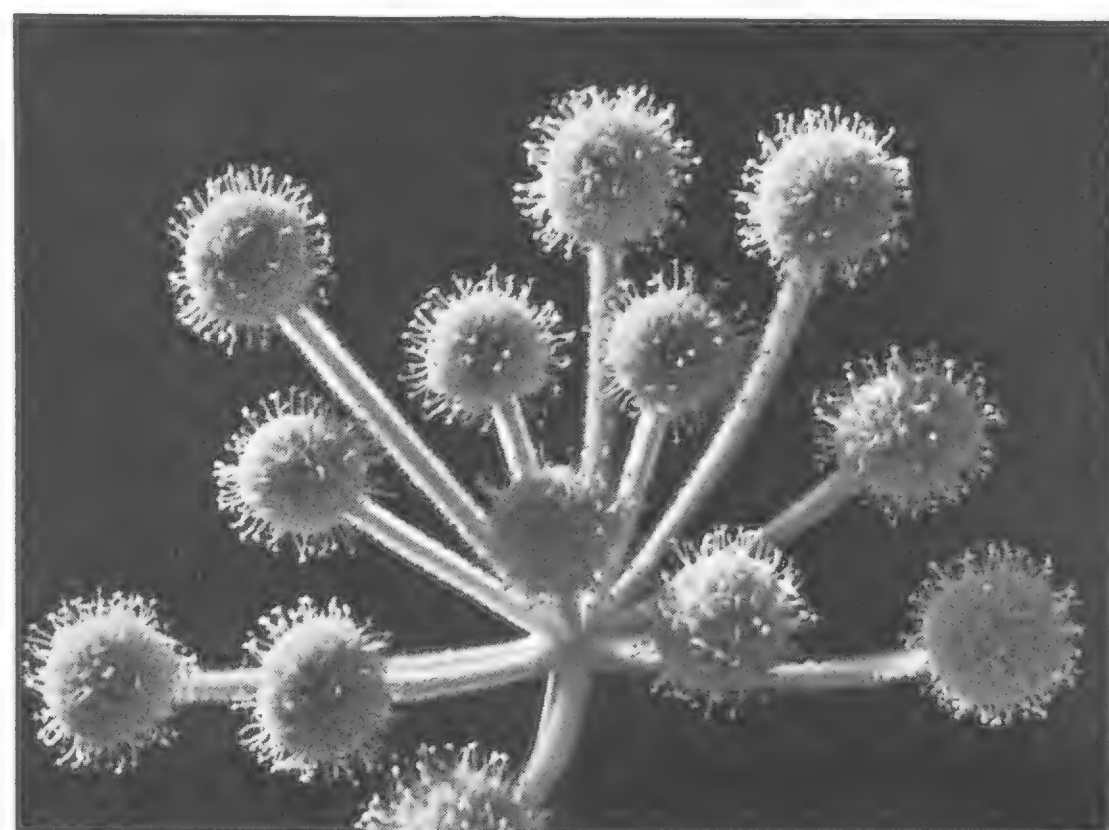
Mrs. Walther Buchen and Miss Muriel French volunteered many hours of their time assisting Mr. Richardson.

PICTURE COLLECTION

Johan Kooy in charge. The picture collection is a special library for graphic material. The principal purpose is to preserve and to make available the historical photographs of Academy activities. It is also a repository for important collections of nature photographs, and a source for illustrative material for Academy publications and the Television Department graphics.



Gifts to the Picture Collection during the year include numerous prints by Henry Evans, left, and photographs by Charles Webber, below.



Mr. Kooy is the Art Director of *Pacific Discovery* and other Academy publications. His development of the picture collection as a department is a part-time effort.

The collection depends heavily on volunteers. Miss Muriel French, for example, is working with the very important Charles Webber photographic collection of western nature subjects, particularly botany and geology. Mr. Webber donated a total of 22,540 black and white prints and negatives, and 2,089 color transparencies during the year, and added 2,064 transparencies to the collection of plant portraits previously given to the Academy. This makes a total of well over 39,000 photographs which Mr. Webber has added to the collections.

Miss Elfreda Kellog and Mrs. Ann Ellis are organizing a particularly important record of scientific research—photographs made on the Templeton Crocker expeditions to the Galápagos and other Pacific Islands. These have been deposited with the Academy on indefinite loan.

Miss Lilian McHoul is processing an anonymous gift of more than 1500 hand-colored, 19th-century botanical prints. Mrs. Mary V. Roberts has added more of her handsome paintings of weedy plants of San Francisco county. Mr. Henry Evans continues to present a copy of each of his actual-scale botanical prints produced by him during the year—many of which were included in a popular three-month special exhibit in Lovell White Hall.

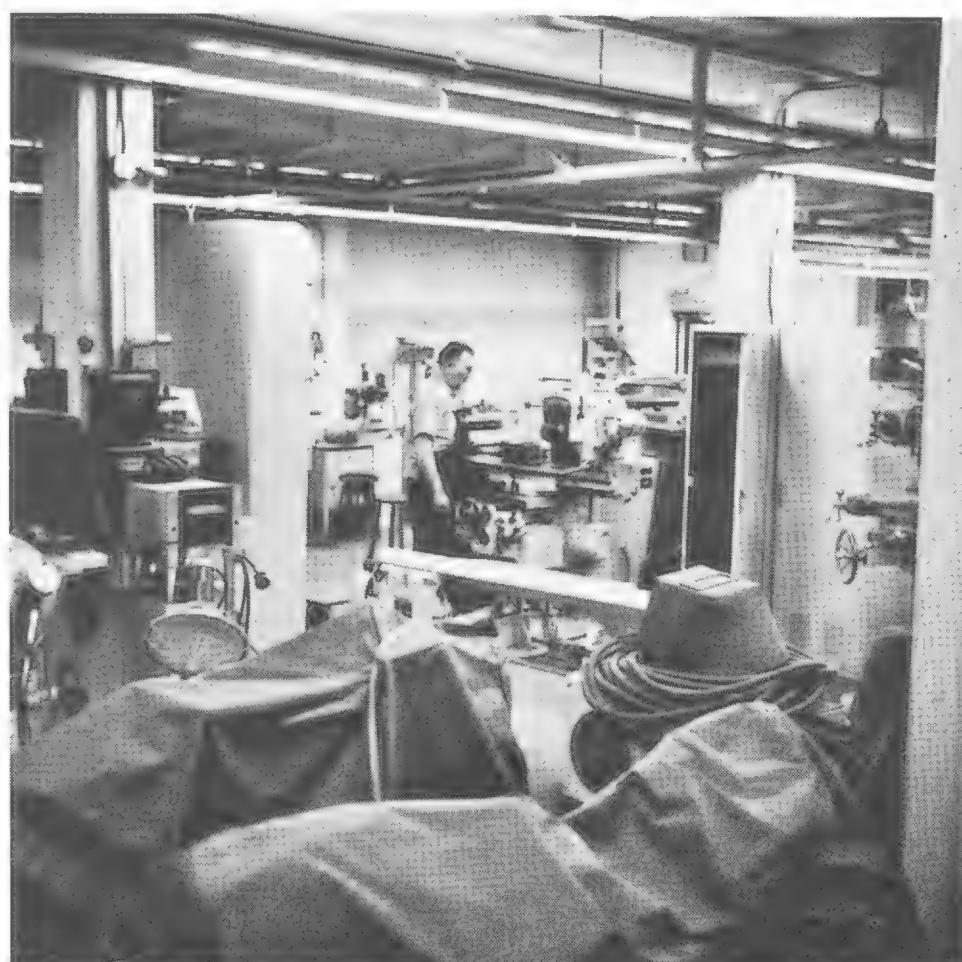
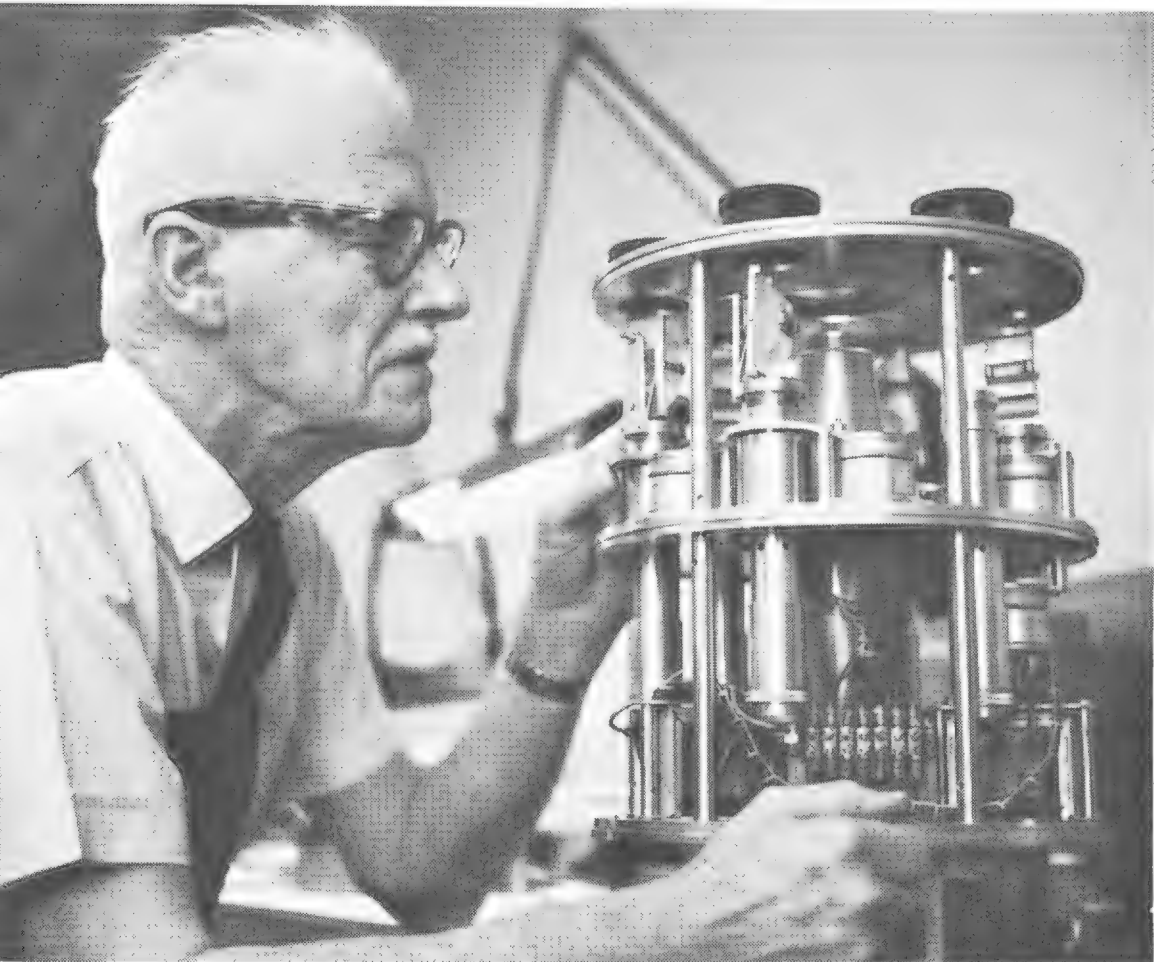
Mrs. George Purmont and Mrs. Allen Mitchum are organizing the zoological section of the collection. Miss Lemoyne Mueller has assisted with the copyright-free illustrations. Mr. Paul Anderson has been tireless in his efforts to process the voluminous additions to the Minerva Hirst Collection of reference pictures.



INSTRUMENT AND CARPENTER SHOPS

Alvin C. Gundred, Superintendent. The Instrument Shop, much of which was developed in order to build Morrison Planetarium's star projector, continues to provide otherwise unobtainable special instruments and equipment for the planetarium and other departments in the Academy. In fact, a planetarium technician is on duty in the shop during every planetarium show, night or day. Because of our unique facilities and talented personnel, the shop has constructed such specialized instruments as orrery projectors and Foucault pendulums for other scientific and educational institutions. No products which are available from commercial sources are provided to other institutions.

The Carpenter Shop makes the specimen cases for many of our scientific collections, and does the carpentry for new exhibit areas. Minor alterations, painting, and the maintenance of the general Academy plant are its additional responsibilities.



Left, A. S. Getten, Instrument Designer, with an Academy Projection Orrery made in the instrument shop. Right, Frank Talbert builds an aurora projector to be used in creating special effects at planetarium sky shows.



STUDENT SECTION

23

Ken Lucas, Supervisor. The "Student Section" is really a Junior Academy of Sciences, and we hope to so recognize it in the near future. This year has been particularly productive for the department. Ken Lucas was appointed Supervisor after serving an introductory apprenticeship under Mearl Carson, who formerly had the responsibility for the department as one of his extra chores.

A Trustee of the Academy, with the promise of anonymity, gave funds for the purchase of a specially-equipped field-type vehicle for the Section, and it has had full use since it was acquired in April of this year.

Junior members meet in the department after school and on Saturday throughout the school year, with special courses being conducted during the summer. Laboratory demonstrations, lectures, supervised field trips, and related activities introduce the younger group—from 10 through 14 years of age—to an understanding and appreciation of the natural world. Senior members of the Section, those from 15 through 21, are specialists with well-developed fields of interest. They carry on their own research projects with the aid and counsel of the instructors, and often themselves help the junior members with their special projects.

Not all of the young people who desired to take the summer courses could be accommodated. Mr. Lucas and Mr. Darrel McKenzie, who conduct the course, had to turn away many applicants. This is unfortunate because, in the past, stimulation of youngsters with scientific interests by the department has resulted in careers in the natural, physical, or medical sciences for many—and for many more, a lifelong avocational interest in those fields.

George E. Lindsay

GEORGE E. LINDSAY
Director



Student Section collecting trips are facilitated by the gift of a specially equipped field vehicle, above. Collections such as that of student Richard Adams, center, are brought to the Academy for study. Below, a student group in the field.



STAFF

As of June 30, 1965

George E. Lindsay, *Director*

Robert T. Orr, *Associate Director*

J. Byron Warner, *Business Manager* • Vashti F. Hawley, *Secretary*

Robert C. Miller, *Senior Scientist*

AQUATIC BIOLOGY (STEINHART AQUARIUM)

Earl S. Herald, *Superintendent-Curator*
Robert P. Dempster, *Assistant Superintendent*
Glenn E. Burghardt, *Assistant Curator*
David C. Powell, *Assistant Curator*
Fred L. Jenne, *Aquatic Biologist*
Marvin Stanley, *Aquatic Biologist*
Karl H. Switak, *Aquatic Biologist (herpetologist)*
Norval J. Green, *Senior Aquarist*
Frederick W. Herms, *Aquarist*
Dennis Sullivan, *Aquarist*
W. Walter Schneebeil, *Aquatic Collector*
Willits Brown, *Aquarium Exhibits Preparator*
Donald A. Simpson, *Consultant (part-time)*
Phyllis J. Ensrud, *Secretary*
Marjorie Hunt, *Research Associate*
J. Richard Skahen, *Research Associate*

ASTRONOMY (MORRISON PLANETARIUM)

Mearl F. Carson, *Acting Chairman*
Thomas M. Gates, *Planetarium Manager*
Steven B. Craig, *Technician*
John H. Leonberger, *Technician*
Lysbeth Fritz, *Secretary*
Maurice R. Amsden, *Lecturer*
Michael A. Bennett, *Lecturer*
Hubert J. Bernhard, *Lecturer*
Charles E. Burleson, *Lecturer*
Charles F. Hagar, *Lecturer*
Harry G. Jorgensen, *Lecturer-Usher*
Andrew J. Bernhard, *Usher*
Charles Bussey, *Usher*
Allwyn Chao, *Usher*
Samuel J. Klenk, *Usher*
Mark Lambert, *Usher*
Jill Carson, *Cashier*
Peggy Kerwin, *Cashier*
Gloria Thompson, *Cashier*
Clay P. Butler, *Research Associate*

BOTANY

John Thomas Howell, *Chairman and Curator*
Elizabeth McClintock, *Associate Curator*
Virginia Moore, *Technical Assistant (part-time)*
Blanche Clear, *Assistant (part-time)*
Anita Noldeke, *Assistant (part-time)*
Sallie Norwall, *Assistant (part-time)*
Doris Cantou, *Assistant (part-time)**
Walter Knight, *Assistant (part-time)**
Philip Wheeler, *Assistant (part-time)**
Mrs. Clare B. Hardham, *Research Associate*
Hans Leschke, *Research Associate*
Henry M. Pollard, *Research Associate*
Lewis S. Rose, *Research Associate*
Ernest C. Twisselmann, *Research Associate*
Beatrice Howitt, *Field Associate*

*Temporary position supported by the Bailey Hortorium grant.

ENTOMOLOGY

Edward S. Ross, *Chairman and Curator*
Edward L. Kessel, *Associate Curator*
Hugh B. Leech, *Associate Curator*
Paul H. Arnaud, Jr., *Assistant Curator*
C. Don MacNeill, *Assistant Curator***
John W. Green, *Scientific Assistant*
Stella E. Tatro, *Secretary*
Mahesh Jha, *Technician***
David Cavagnaro, *Technician***
Edward O. Essig, *Research Associate*
Kenneth E. Frick, *Research Associate*
Harriet E. Frizzell, *Research Associate*
J. Linsley Gressitt, *Research Associate*
E. Gorton Linsley, *Research Associate*
Robert L. Usinger, *Research Associate*
Francis X. Williams, *Research Associate*

**Temporary position supported by a National Science Foundation grant.

EXHIBITS

Mearl F. Carson, *Chairman and Curator*
Toshio Asaeda, *Associate Curator*
Charles E. Dornbach, *Senior Assistant*
Timothy J. O'Leary, *Assistant*
Franklyn Kreighbaum, *Cabinetmaker*
Ansel E. Adams, *Research Associate*

GEOLOGY

G Dallas Hanna, *Chairman and Curator*
Leo G. Hertlein, *Curator of Invertebrate Paleontology*
Dorothy M. Ludlow, *Secretary (part-time)*
A. L. Brigger, *Research Associate*
Charles W. Chesterman, *Research Associate and Honorary Curator of Minerals*
Clifford C. Church, *Research Associate*
Alan J. Galloway, *Research Associate*

HERPETOLOGY

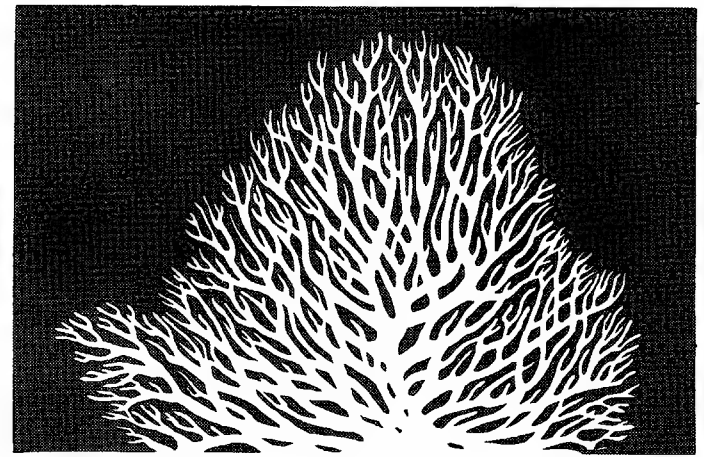
Alan E. Leviton, *Chairman and Curator*
Steven C. Anderson, *Assistant Curator*
Charlotte H. Dorsey, *Secretary (part-time)*
Benjamin H. Banta, *Research Associate*
James R. Dixon, *Research Associate*
Benjamin W. Grunbaum, *Research Associate*
Malcolm R. Miller, *Research Associate*
George S. Myers, *Research Associate*
Lawrence W. Swan, *Research Associate*
John Gasperetti, *Field Associate*
Allen Greer, *Field Assistant*

HOROLOGY

Bruce A. Kock, *Honorary Curator*

ICHTHYOLOGY

W. I. Follett, *Chairman and Curator*
Lillian J. Dempster, *Associate Curator*
Carl L. Hubbs, *Research Associate*

**INSTRUMENT AND CARPENTER SHOP**

Alvin C. Gundred, *Superintendent*
A. S. Getten, *Instrument Designer*
Frank M. Talbert, *Machinist*
Peter P. Tebneff, *Chief Installer*
Afanasyi Wysokov, *Cabinetmaker*
Uldarico Gontenas, *Assistant Cabinetmaker*
Frank Ramirez, *Assistant Electrician (part-time)*

INVERTEBRATE ZOOLOGY

Robert C. Miller, *Chairman and Curator*
Allyn G. Smith, *Associate Curator*
Charles R. Stasek, *Assistant Curator****
Dustin D. Chivers, *Technical Assistant****
Ludmeila Axionoff, *Clerical Assistant*
Francis P. Filice, *Research Associate*
Joel W. Hedgpeth, *Research Associate*
A. Myra Keen, *Research Associate*
Robert R. Talmadge, *Field Collector*

***Temporary position supported by a
National Science Foundation grant.

LIBRARY

Ray Brian, *Librarian*
Margaret T. Cairns, *Assistant Librarian*
Nancy Haritatos, *Assistant Librarian (part-time)*
Miriam Barnett, *Library Assistant (part-time)*
Urbain Kinet, *Library Assistant*
Velma Harris, *Library Assistant*
Mary Stilwell, *Library Assistant*
Dolores Cadell, *Library Associate*
Margaret W. Campbell, *Library Associate*
Jeanette Hopkins, *Library Associate*
Anson Herrick, *Library Associate*
Florence Walter, *Library Associate*

MAINTENANCE AND OPERATING

Geno J. Morini, *Senior Stationary Engineer*
Herbert Banister, *Stationary Engineer*
Andrew J. Bell, *Stationary Engineer*
John C. Brennan, *Stationary Engineer*
Jack V. Daley, *Stationary Engineer*
Howard R. Driscoll, *Stationary Engineer*
Arthur J. Noonan, *Stationary Engineer*
Mayo L. Banks, *Museum Guard (part-time)*
John T. Phillips, *Museum Guard*
Joseph A. Gomez, *Janitor Sub-foreman*
Rachel Worthery
Louis M. Blakely
Nathan C. Cole
Bernard Conlon
James Jackson, Jr.
Eugenio Luis
Clenny J. Thierry

OFFICE

Paul G. Brislawn, *Accountant*
Sally A. Brunot, *Stenographer*
Marian Ganapol, *Membership Secretary (part-time)*
Dorothy N. Lohmeyer, *PBX Receptionist*

Olive T. Lucich, *Assistant Bookkeeper*

Edna Abbott
Lorraine F. Blankenhorn
Ruth T. Bush
Rowena E. Darch
Helena Herrington
Gladys A. Hughes
Lilian I. Grainger
Marion S. Kellogg
Marion Mortenson
Fay Read
Greta Traub
Irene S. Williams

ORNITHOLOGY AND MAMMALOLOGY

Robert T. Orr, *Chairman and Curator*
Jacqueline Schonewald, *Technical Assistant*
Charlotte H. Dorsey, *Secretary (part-time)*
Robert I. Bowman, *Research Associate*
Anatole S. Loukashkin, *Research Associate*
Dorcas E. MacClintock, *Research Associate*
J. Stuart Rowley, *Research Associate*
Walter A. Sheppe, *Research Associate*
J. Dan Webster, *Research Associate*

PACIFIC DISCOVERY

Bruce Finson, *Editor*
Johan Kooy, *Art Director*

PHOTOGRAPHY

Maurice C. Giles

PICTURE COLLECTION

Johan C. Kooy

PUBLIC INFORMATION

Hal Richardson

SCIENTIFIC PUBLICATIONS

Edward L. Kessel, *Editor*
Dorothy M. Ludlow, *Secretary (part-time)*
Winifred S. O'Neill
Glen S. Hayden

STUDENT SECTION

Mearl F. Carson, *Advisor*
Ken Lucas, *Supervisor*
Darrel McKenzie, *Assistant (part-time)*

TELEVISION*

Daniel J. Norton, *Executive Producer*
Robert L. Olsen, *Associate Producer*
David W. Parker, *Director*
Margaret Norton, *Continuity*
David Porrazzo, *Graphics*
Ronald L. King, *Animation*
Thea Bentler, *Film Editor*
James P. Smith, *Assistant Film Editor*
William Westcott, *Cinematographer*
Robert Hansen, *Audio*
Sue Weaver, *Unit Manager*

*As of June 15, 1965

STAFF PUBLICATIONS

26

ARNAUD, PAUL H.

- 1964 [Book notice.] The fruit flies of Tephritidae of California, by Richard H. Foote and F. L. Blanc. Pan-Pacific Ento., vol. 40, no. 3, p. 154.

BANKS, RICHARD C., and ROBERT T. ORR

- 1964 (see: Orr, Robert T., and Richard C. Banks)

- 1965 An unusual habitat for purple martins. Auk, vol. 82, pp. 271-273.

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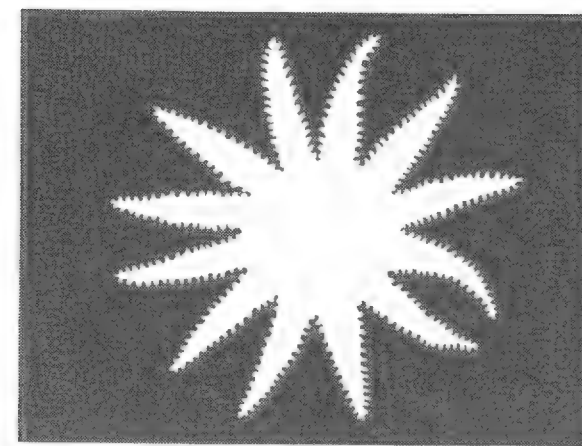
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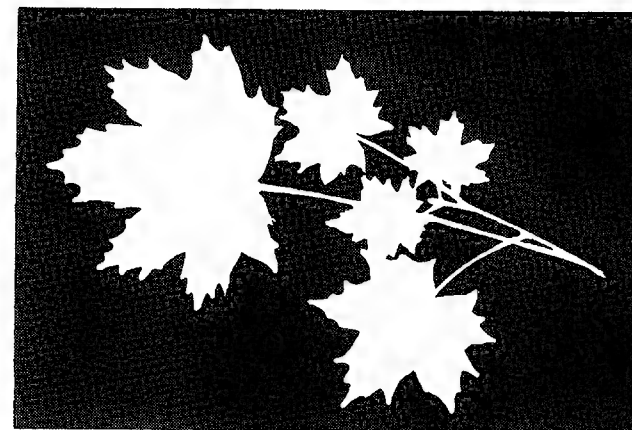
WITH THANKS

The Academy is indebted to many business organizations and foundations, in addition to many individuals, for their support of its scientific research work. Without this support such research would have to be drastically reduced. Among the organizations and foundations that have supported the Academy are:

28

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CALIFORNIA ACADEMY OF SCIENCES

FUND BALANCE SHEETS, JUNE 30, 1965 AND 1964

ASSETS	1965	1964	LIABILITIES AND FUND BALANCES	1965	1964
			OPERATING FUNDS		
Cash	\$ 25,490	\$ 33,865	Accrued interest on note payable	\$ 88	\$ 2,683
Receivables			Due to Endowment Fund	254,000	104,000
Grants	52,529	63,057	Fund balances		
Other	36,681	19,911	Unrestricted (deficit)	(172,740)	(53,173)
			Contract Research, Restricted	57,270	86,262
	89,210	82,968	Totals	\$ 138,618	\$ 139,772
Inventory of books, cards and other items, at cost	10,747	9,080			
Unamortized lease cost (lease expires in 1984)	13,171	13,859			
Totals	\$ 138,618	\$ 139,772			
			ENDOWMENT AND SPECIAL PURPOSE FUNDS		
Cash	\$ 33,731	\$ 81,618	Note payable		
Savings account deposits	37,988	36,596	To an insurance company, secured by deed of trust to real property	—	\$ 210,000
Due from operating fund	254,000	104,000	To a bank, secured by pledged securities	\$ 210,000	—
Investment fund, special purposes			Fund balances		
Securities, at cost (market value 1965—\$408,169, 1964—\$398,850)	325,520	325,495	Restricted to plant additions	25,041	28,225
Trust savings account	249	274	Restricted to other special purposes	419,259	424,495
	325,769	325,769	Endowment	1,979,169	1,779,906
Investment fund, endowment					
Securities, at cost (pledged 1965, see contra market value 1965—\$1,301,633, 1964—\$1,445,917)	1,111,806	1,253,663			
Trust savings account	214,287	15,797			
	1,326,093	1,269,460			
Commercial building (pledged 1964, see contra)					
Land, at cost (building costing \$516,819 is fully depreciated)	608,083	608,083			
Television equipment, net	31,905	—			
Real estate under sales option	15,900	17,100			
Totals	\$2,633,469	\$2,442,626	Totals	\$2,633,469	\$2,442,626
			FIXED ASSETS		
Collections, library and equipment, at cost	\$ 942,741	\$ 934,809	Balance of fixed assets	\$ 942,741	\$ 934,809

The accompanying notes are an integral part of the financial statements.

California Academy of Sciences
San Francisco, California

We have examined the fund balance sheets of the California Academy of Sciences, as of June 30, 1965, and the related statement of general operations and statement of changes in fund balances for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the accompanying fund balance sheets and the related statement of general operations and statement of changes in fund balances present fairly the financial position of the California Academy of Sciences at June 30, 1965, and the results of its activities for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

L. H. PENNEY & Co.

August 16, 1965
San Francisco, California

CALIFORNIA ACADEMY OF SCIENCES

STATEMENT OF GENERAL OPERATIONS
FOR THE YEARS ENDED JUNE 30, 1965 AND 1964

31

INCOME	1965	1964
General		
Membership dues	\$ 39,127	\$ 36,483
Rent from Commercial Building	119,898	109,304
Contributions, income from endowments and from special purpose funds	107,682	158,736
Grants for contract research	149,805	151,791
Public operations		
City and County of San Francisco		
Steinhart Aquarium	141,452	136,943
Museum activities	74,746	65,350
Civil Service salaries	161,189	156,118
Contributory activities		
Planetarium and instrument shop	123,053	131,255
Television	177,283	58,616
Pacific Discovery	8,888	10,205
Counter and publication sales	78,520	76,582
Rental, snack bar and miscellaneous	50,823	44,551
Totals	1,232,466	1,135,934
EXPENDITURES		
Public operations		
Steinhart Aquarium	141,452	136,943
Museum activities	89,395	73,044
Civil Service salaries	161,189	156,118
Contributory activities		
Planetarium and instrument shop	86,404	85,737
Television	300,749	217,904
Pacific Discovery	38,746	36,055
Cost of sales	73,934	81,220
Scientific research and curatorial activities		
Aquatic biology	38,904	33,295
Botany	29,000	27,885
Entomology	72,599	76,553
Geology	22,174	24,216
Herpetology	20,892	16,057
Ichthyology	9,270	10,718
Invertebrate zoology	31,313	23,556
Ornithology and mammalogy	23,347	9,797
Library	33,230	28,332
Other research	27,293	38,012
Administrative and general	131,004	119,309
Contributions to employees' pension annuity	10,215	25,945
Interest	10,923	12,075
Totals	1,352,033	1,232,771
EXCESS OF EXPENDITURES OVER INCOME	\$ 119,567	\$ 96,837

1964 income and expenditures have been reclassified to conform with those of the current year.

CALIFORNIA ACADEMY OF SCIENCES

STATEMENT OF CHANGES IN FUND BALANCES FOR THE YEAR ENDED JUNE 30, 1965

	<u>Operating funds</u>		<u>Endowment and special purpose funds</u>			
	<u>Unrestricted</u>	<u>Contract research, restricted</u>	<u>Plant additions</u>	<u>Special purpose</u>	<u>Endowment</u>	<u>Fixed assets</u>
Balances (deficit), June 30, 1964	<u>(\$ 53,173)</u>	<u>\$86,262</u>	<u>\$28,225</u>	<u>\$424,495</u>	<u>\$1,779,906</u>	<u>\$934,809</u>
Additions (deductions)						
Gifts, bequests and grants received			4,000	17,003	185,153	
Income from investments			689	15,443	45,700	
Net gain on sale of securities					11,610	
Other receipts				4,864	2,500	
Additions to library						7,932
Expenditures for special purposes			(7,873)	(29,348)		
Appropriation of funds to general income				(13,198)	(45,700)	
Excess of operating expenditures over income and appropriations .	(119,567)					
Excess of contract research, restricted expenditures over income .		(28,992)				
Net additions (deductions)	<u>(119,567)</u>	<u>(28,992)</u>	<u>(3,184)</u>	<u>(5,236)</u>	<u>199,263</u>	<u>7,932</u>
Balances (deficit), June 30, 1965	<u>(\$172,740)</u>	<u>\$57,270</u>	<u>\$25,041</u>	<u>\$419,259</u>	<u>\$1,979,169</u>	<u>\$942,741</u>

The accompanying notes are an integral part of the financial statements.

NOTES TO FINANCIAL STATEMENTS JUNE 30, 1965

1. Fixed Assets

Buildings located in Golden Gate Park carried at \$2,354,362 are not included in fixed assets as title to buildings is vested in the City and County of San Francisco.

2. Note Payable

Securities held in trust for the endowment fund are pledged as collateral for the note payable to a bank. The note matures September 22, 1965, with interest thereon at the rate of 5% per annum payable monthly.

3. Television Contract

On July 1, 1965, the California Academy of Sciences entered into a five year licensing agreement with Science Films, Inc. The agreement requires the licensee to produce at its own expense and risk the television series "Science In Action." In consideration, the Academy is to receive a royalty fee of ten percent of gross receipts from the distribution and sale of films produced by the licensee during the first year and fifteen percent thereafter.

For the distribution and sale of films produced by the California Academy of Sciences prior to July 1, 1965, the licensee is to pay to the Academy forty percent of gross receipts during the first year and fifty percent thereafter. The agreement is subject to the right of termination by either party after July 1, 1967.

4. Litigation Pending

The Academy, in 1964, brought a lawsuit against J. B. Wilson and RSS Corporation for monies due on the sale and servicing of syndicated television programs in the approximate amount of \$75,000. The lawsuit has not been set for trial.

5. Accounting Method

The California Academy of Sciences has established the practice of recording gifts and bequests only when received.

The cost of producing television and other films is reflected as an operating expenditure in the year incurred.

FORM OF BEQUEST

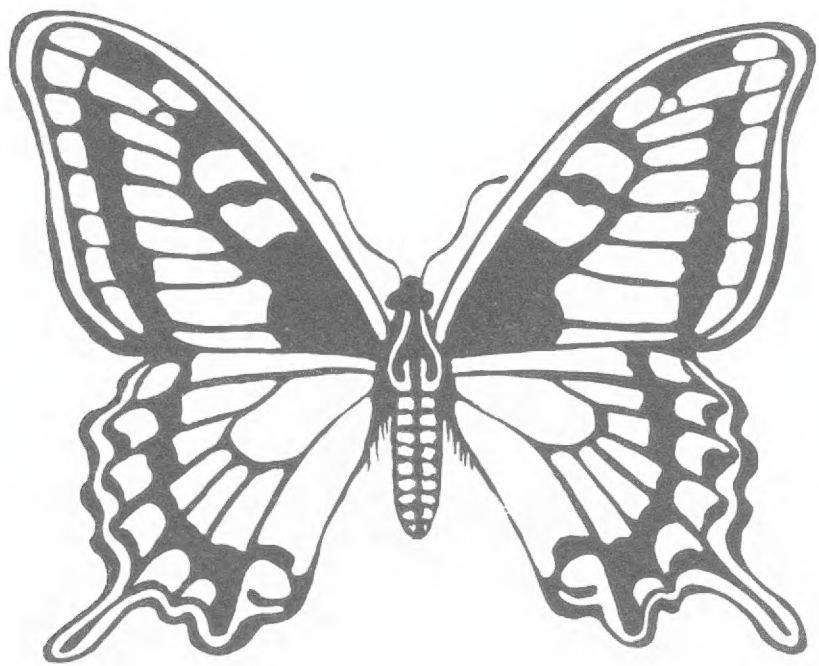
I give and bequeath to the California Academy of
Sciences in the City of San Francisco the sum of

.....
for such purposes as the Trustees of said Academy
may determine.

.....
Signature

HAVE YOU BEEN MEANING TO?

Many friends of the Academy tell us they have been meaning to give or bequeath money to the Academy's Endowment Fund, but haven't got around to it. The gift and bequest forms on this slip will help make this easier. If you would like to make a contribution to the Academy at this time, fill out the gift form and send it with your check. To make a bequest to the Academy, fill out the bequest form and send it to your lawyer.



ENDOWMENTS

ENDOWMENT FUNDS are the least romantic aspect of the support of an academic institution. When you give money for a new building, or to finance an expedition, the benefits are clear and tangible to both donor and recipient—a new building is erected, or new knowledge and specimens are brought back from far-off lands. The endowment fund, on the other hand, shows no such obvious benefits. Money is received, thanks are given—and the institution goes on.

But the endowment fund is the foundation stone of the institution's day-to-day economy. Research staff salaries, office and laboratory equipment—such things are paid for by the income from the endowment fund. Without it many of the Academy's research departments would be empty rooms. But with an assured income from endowment, the Academy can employ more scientists, curate more specimens, publish more papers—in short, carry on the continuing business of being a scientific institution. No one detail of this work stands out from the others; but put together they make the living and evolving California Academy of Sciences.

An endowment contribution or bequest is your investment in the continued development of the West's oldest scientific institution, an investment that yields dividends to the Academy year after year. True, you cannot look at a new building and say to yourself, "I built that Hall of Science" or examine a newly named specimen and say, "I made its discovery possible." What you can do is look at the Academy in its entirety and say, "I help keep the Academy going."

